AMATEUR RADIO

DECEMBER 1993
Volume 61 No 12

Journal of the Wireless Institute of Australia

IN THIS ISSUE:

Latest on New Regulations
Bandwidth Limiting LF Converter
Getting a Multiband HF Vertical to Go
Field Day Preparation

and lots more

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The Mellish Reef DXpedition — 18-27 September 1993.
Inset photo: Top left to right: John G3WGV, Atsu VK2BEX
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Photos from Atsu VK2BEX

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Federal QSP

In this the last month of yet another year, we have a mixed bag of subjects for this column. Let me begin with this magazine *Amateur Radio*. The then Production Editor, Bruce Bathols VK3UV, resigned in June to take up another appointment and his shoes were filled on a temporary basis by Bill Roper VK3BR. Bruce's plans were thwarted by a bout of poor health which necessitated a change in his plans. We wish Bruce a return to full health and best wishes in his new endeavours.

Bill's term as Production Editor has been extended to the end of 1994 during which time the Federal Council will be examining options for the production of *Amateur Radio* in future years to ensure that the most cost-effective method of production is used to bring you a magazine of which we can all be proud.

As we approach the festive season, it is a good time to reflect on what amateur radio means to us and what we get out of it. There has been comment recently, both within the amateur fraternity and in other publications, about the behaviour of a small number of amateurs in the way they pursue their hobby. Some of us, it seems, do not like to hear constructive comments on the quality of our transmissions and abuse those who attempt to inform us. The attitude of some who use the packet radio medium has also come in for comment recently. What some operators may not be prepared to say on air, they are prepared to put into "print" in the form of messages on the various bulletin board systems. Many of these messages are not fit for transmission through the packet networks and cause the Sysops of the various systems to expend many hours vetting the messages lodged on their systems to ensure they are suitable for transmission. Most Sysops feel a moral obligation to undertake this task, even though it is not yet required by law. However, if recent events overseas in this area are translated to the Australian environment, we may find Sysops held legally liable for the content of messages on their BBS systems.

A good New Year's resolution for all of us would be, critically, to examine our operating practices and ensure that we are being fair to our fellow amateur operators, and that we think before we speak or put fingers to keyboard so that our actions will not be seen as being anything other than those of a responsible body of people interested in furthering the aims of amateur radio. While we project a public image, whether consciously or not, that is anything other than this, it will be difficult for us to convince the authorities or the public at large that we are deserving of the band space and privileges which attach to our licences.

Finally, as Christmas approaches, on behalf of the Federal Council and the Federal Office, I wish you one and all a happy and safe Christmas and a prosperous New Year.

Kevin Olds VK1OK
Federal President
ar

Editor's Comment

Democracy

There are very few systems of governments or administration which do not claim to be "democratic". We have seen many cases in the last few years of the "Peoples' Democratic Republic of This, That or the Other" collapsing in chaos while its people run murderous riot in the streets. Strangely, most countries which may more truly claim to be democratic seem not to need the word in their title. They may have riots occasionally but they don't often collapse! Take the United States of America. Between 1861 and 1865 half the country tried to kill the other half! Yet in 1863, at Gettysburg, President Abraham Lincoln gave the world a superb definition of democracy; "Government of the People, BY the People FOR the People". The rest of the world, including the USA, is still trying to find the best way of achieving this noble aim.

A similar situation exists with organisations such as the WIA. Just as governments are necessary for countries, to do collectively what individuals cannot do, particularly internationally, so also are organisations necessary for special interests like amateur radio, and for just the same reasons. Organisations, like governments, consist of representatives. The question is, how should the representatives be chosen? It would seem better for the means of choice to be democratic. That is, chosen BY the members, FROM the members. There should be no argument that the organisation is FOR the members.

Can we honestly say that the WIA is a democratic organisation? Is it even possible that it exists more for some than others? Could it be that

Continued on page 55

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers			Weekly News Broadcasts		1994 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Secretary Treasurer	Christopher Davis Hugh Blemings Don Hume	VK1DO VK1YYZ VK1DH	3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each Monday evening (except the fourth Monday) commencing at 8.00 pm.	(F) (G) (S) (X)	$70.00 $56.00 $42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Fax (02) 633 1525	President Secretary/ Treasurer (Office hours	Terry Ryeland Roger Harrison Mon-Fri 11.00-14.00 Wed 1900-2100)	VK2UX VK2ZTB	From VK2WI 1.845, 3.595, 7.146*, 10.125, 24,950, 28.320, 52.120, 52,525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay via a local 2 metre repeater. Sunday 1000 and 1915. Highlights included in VK2AWX Newcastle Monday 1930 on 3.593 plus 10mx, 2mx, 70cm, 23cm. News headlines by phone (02) 552 5188. Some broadcast text can be found on the Packet network.	(F) (G) (S) (X)	$66.75 $53.40 $38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Secretary Treasurer Office hours	Jim Linton Barry Wilton Rob Hailey Tue & Thur 0830-1530	VK3PC VK3XV VK3XLZ	1.840MHz AM, 3.615 SSB, 7.085 SSB, 53.900 FM(R) Mt Dandenong, 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) (G) (S) (X)	$72.00 $58.00 $44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Secretary Treasurer	Ross Marren Lance Bickford David Travis	VK4AMJ VK4ZAZ VK4ATR	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) (G) (S) (X)	$72.00 $58.00 $44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Bob Allan Maurie Hooper Bill Wardrop	VK5BJA VK5EA VK5AWM	1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, 145.000 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) South East, ATV Ch 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555m 146.5000, 0900 hrs Sunday	(F) (G) (S) (X)	$72.00 $58.00 $44.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 388 3888	President Secretary Treasurer	Cliff Bastin Bruce Hedland-Thomas	VK6LZ VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury) 147.225(R), 147.250(R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker broadcast repeated on 146.700 at 1900 hrs.	(F) (G) (S) (X)	$60.75 $48.60 $32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Secretary Treasurer	Andrew Dixon Ted Beard Peter King	VK7GL VK7EB VK7ZPK	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) (G) (S) (X)	$67.00 $53.65 $39.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).						

Note: All times are local. All frequencies MHz.

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A Bandwidth Limiting LF Up Converter for Frequencies Around 200 kHz

Lloyd Butler VK5BR has a different approach to Low Frequency converter design, and it works!*

Introduction

Over recent years a few radio amateurs have ventured into experimental communications at frequencies around 200 kHz. Not many amateurs have receiving equipment for such low frequencies, and some might attempt building an LF up converter to operate in conjunction with their higher frequency receiver. The one I am about to describe is a little different from the usual design, and I must first introduce reasons for that difference.

I refer you to experimental CW transmissions on 196 kHz carried out by John Adcock VK3ACA and Don Bainbridge VK3BDJ at Gordon, Victoria. I monitored, in Adelaide, the 6th June 1992 tests, and the results obtained illustrate the points I wish to make. Using a receiver in a wide-band mode and connected to a long wire antenna, the signals were barely discernible amidst the inherent band noise. However, I was able to resolve these almost noise free with the following:

(1) *Limiting the receiver bandwidth* — As the CW signal is a narrow band mode, the noise bandwidth can also be reduced to no more than that required for reproduction of the signal.

(2) *Use of a tuned loop antenna* — The loop is less susceptible than the long wire to pick up of near-field noise. Its directional properties also enhance its ability to improve the signal-to-noise ratio (see Reference 1).

(3) *Use of a sharp audio filter* — As a single audio frequency keyed tone is produced by the receiver beat oscillator, audio bandwidth can also be limited to further reduce the noise.

If one adds an LF converter to an existing receiver, the first requirement to limit the bandwidth might be satisfied if the receiver has a crystal filter. Many receivers have such a filter fitted in the 455 kHz IF chain, but what do we do if no such filter is installed? One might consider making modifications to the receiver, but this could prove to be difficult or messy. The question I am raising is how bandwidth limiting might be achieved in the add-on converter circuit itself. At VLF (say 20 kHz) this can easily be achieved in the front end using a high Q circuit. For example, at 20 kHz a tuned circuit with a Q of 100 has a 3 dB bandwidth of only 200 Hz, which is suitable for the narrow band signal. However, at 200 kHz, the same Q of 100 gives 2000 Hz bandwidth, too wide for our purpose. So, at 200 kHz, we need some other means of narrowing the bandwidth, and this has led to the particular LF converter design which I will discuss.

A Different Arrangement

The usual form of LF up converter is shown in figure 1. The LF signal is mixed with a fixed frequency oscillator (usually crystal locked) to produce a higher first intermediate frequency at which the front end of the receiver is set. The incoming LF frequency is selected by tuning the receiver frequency to provide, in effect, a variable first intermediate frequency.

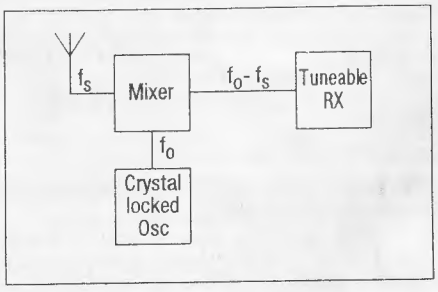

Figure 1 — Usual form of converter.

To achieve bandwidth limiting, I have rearranged the conversion circuit so that the oscillator is variable and the first intermediate frequency (or receiver input frequency) is fixed, allowing the insertion of a crystal filter at that fixed frequency (the changed arrangement is shown in figure 2). The incoming LF frequency is now selected by tuning the oscillator instead of the receiver. To satisfy the second requirement listed earlier, the tuned front end also incorporates a loop antenna.

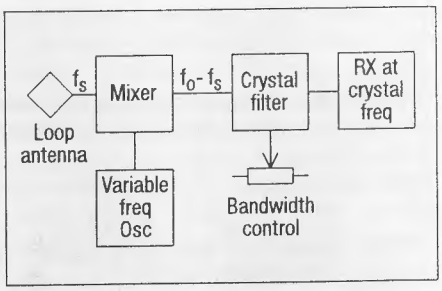

Figure 2 — Converter re-arrangement to limit bandwidth.

Choice of Crystal Frequency

My original idea was to convert up to 3.5 MHz and make use of a crystal around this frequency. Most radio amateurs would have a transceiver which operates on 3.5 MHz even if they have nothing else. However, tests on a crystal filter using crystals around this frequency produced bandwidths around 400-600 Hz. I thought this was too wide, and finished up using a crystal of 1.5 MHz, which produced a bandwidth of around 200-250 Hz. Of course, the precise frequency is not important, but I happened to have a crystal on 1.5 MHz which sits right at the end of the broadcast band. One might prefer to use a crystal on the amateur band at 1.8 MHz, and this could be expected to produce a somewhat similar bandwidth. In any case, the bandwidth varies a little with the Q of individual crystals.

The Circuit

The circuit of the LF converter, less the variable frequency oscillator (VFO), is shown in figure 3. A loop antenna as specified forms the inductance for input tuning at LF. This operates indoors and is connected to the tuning capacitor and interface amplifier via 150 cm of RG58 coaxial cable. The loop tunes between 180 and 370 kHz, using a three-gang 10 to 450 pF tuning capacitor with its three sections paralleled. The tuning range can be extended down to 150 kHz by switching in parallel a fixed capacitor of 470 pF. The length of the cable can be increased with some reduction in the upper frequency limit due to the increased residual capacity caused by the cable. As discussed in the introduction, the loop antenna helps to further improve the signal to noise ratio.

The LF353 JFET operational amplifier package N1 interfaces the loop and the mixer stage. The high impedance input of N1A prevents loading of the loop and the stage provides RF gain. The low impedance output of follower stage N1B drives the mixer stage V1, V2.

The amplified LF signal is mixed with the output of the VFO in the balanced mixer stage. The balanced form of mixer is considered desirable

"The tuning range can be extended down to 150 kHz . . ."

to prevent any significant level of VFO signal from reaching the receiver. The receiver input circuits might otherwise be not able to attenuate sufficiently the VFO signal which is only 150-370 kHz above the 1.5 MHz intermediate frequency. The discrete component balanced mixer using MPF131 transistors was used simply because I had a card already wired up but discarded from a previous project. Otherwise I might have considered using a balanced modulator package such as the MC1496. The balanced mixer shown incorporates a balancing potentiometer RV1. This is set for minimum VFO level at the secondary of T2.

The output from the mixer is fed via crystal filter T3-X1 etc. Potentiometer RV2 controls the bandwidth of the circuit. When the potentiometer is at maximum resistance, it has little effect on the performance of the crystal and the bandwidth is set to its minimum value by the characteristics of the filter. At minimum resistance, the crystal is shorted out and the bandwidth is set by the loop antenna Q in conjunction with the receiver inherent bandwidth. By adjusting the setting of the potentiometer, a bandwidth can be selected as desired between the two conditions. For better spread of adjustment, a logarithmic potentiometer is used. This must be connected for maximum resistance when set fully clockwise.

Trimmer capacitor C10 balances out the crystal holder capacity so that the crystal operates in a series resonant mode. The setting of C10 depends on the style of crystal unit. An easy way to set C10 is to tune the

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LF converter/receiver to a frequency where only noise is received. With RV2 set for minimum bandwidth, C10 is adjusted for minimum noise as indicated on the receiver S meter, or as heard in the speaker.

The crystal filter output is fed to the receiver input via interface emitter follower stage V3. The connection between converter and receiver is shielded to prevent pickup of signals direct into the receiver. The converter cannot be used with a receiver which incorporates a loop stick in its front-end tuning. The loop stick does a fine job of picking up signals in its own right and, of course, must be switched out to prevent interference from those signals. The receiver I used had a loop stick on the broadcast band, but fortunately the next band with standard coils also extended to 1.5 MHz.

The VFO

To tune the LF range of 150-370 kHz, the VFO must be tunable between 1.65 and 1.87 MHz. For best performance of the balanced mixer used, the output of the VFO needed to be in the order of several volts peak to peak. In tuning the VFO, its frequency has to be set quite accurately because of the limiting bandwidth of the crystal filter. The tuning control must therefore be coupled to a good vernier reduction drive and the oscillator frequency must be reasonably stable.

As it happened, I had a VFO ready-made for another project that was put aside, and it was only a matter of changing the frequency range of the tuning. The circuit as shown in figure 4 was based on a design originally published in Break-in. Rob Gurr

"The multitude of NDB stations above 200 kHz . . . provides plenty of test signals . . ."

VK5RG introduced me to the circuit some years ago and, as it seemed to work quite well, I have used it on several projects. The circuit, complete with buffer stages and low pass filter, is probably more elaborate than we need, and I would envisage introducing a simpler circuit later on to do the job. In the meantime, the VFO has provided a stable frequency output at a level of around five volts peak to peak, and has done its job to verify the merits of the system.

Circuit Simplification

At this stage I see some scope for simplification of both the mixer and the VFO circuitry. An attractive option is to make use of balanced mixer type NE602, which has appeared in receiver circuits published in overseas journals. The NE602 appears to do the same job as the well known balanced mixer type MC1496, but does so without all the external resistors required to make the latter work. Furthermore, it has an inbuilt oscillator circuit which can be made to operate by the addition of an external tuned circuit or crystal.

Operation

In setting up the receiver, it is first tuned as close as possible to 1.5 MHz as indicated by the receiver calibration. A distant non-directional beacon (NDB) is tuned in by the converter and the receiver is then finely tuned for maximum signal, preferably indicated on an S meter, if fitted. The signal can be located with the crystal filter set for wideband, but it is important that final adjustment be made with minimum bandwidth.

Tuning of the loop antenna is fairly sharp and must be set for maximum signal. Manual adjustment of tracking between the loop tuning and the VFO tuning is simplified if both tuning dials are calibrated. Some misleading

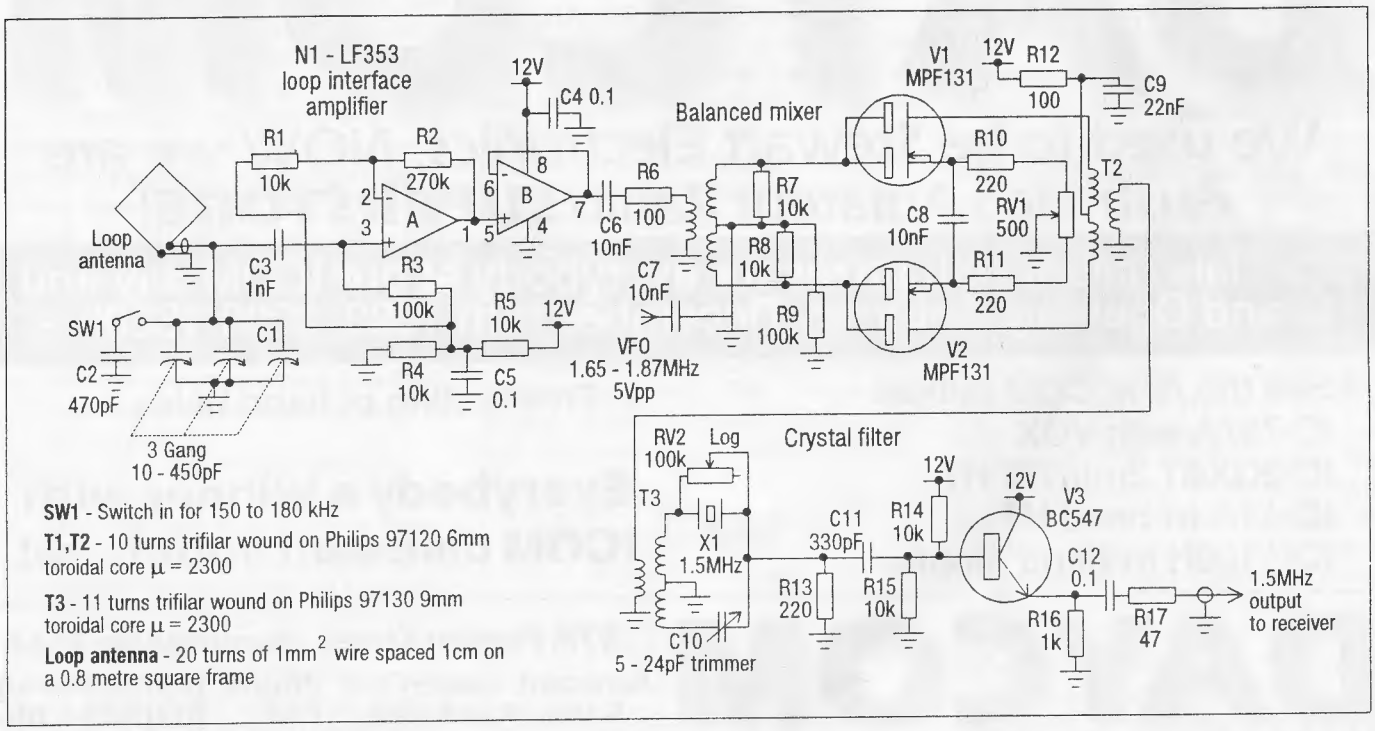

Figure 3 — Bandwidth limiting LF converter, 150-370 kHz.

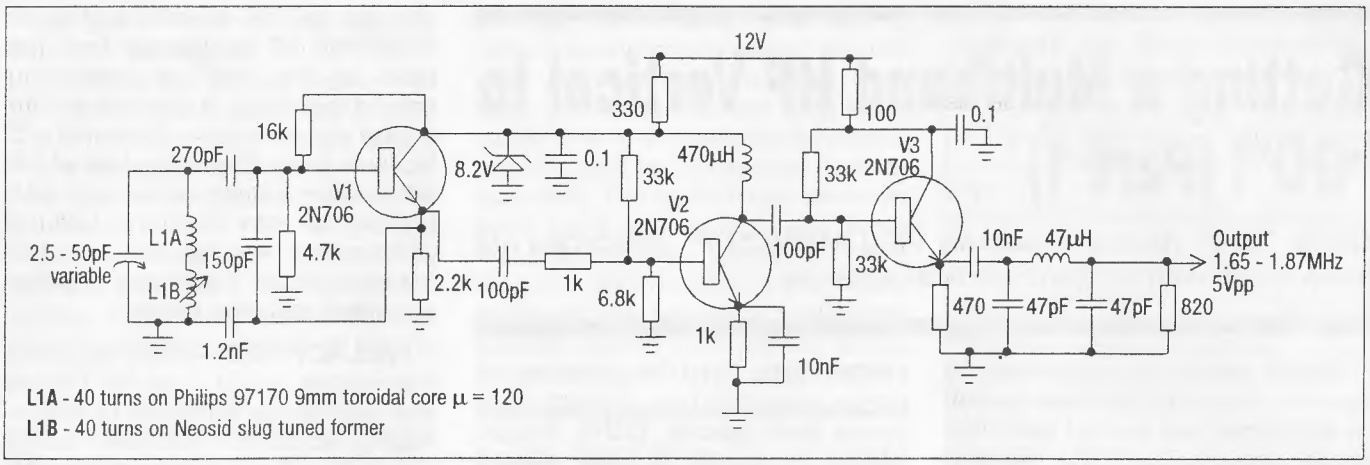

Figure 4 — The VFO is somewhat elaborate and a simpler arrangement is envisaged.

cross-modulation effects can occur if the loop is wrongly peaked to the frequency of a strong local NDB station. A distant signal can also be missed if the signal direction happens to fall within the loop null. In searching for signals, rotation of the loop is part of the tuning ritual.

The multitude of NDB stations above 200 kHz with MCW keyed ident codes provides plenty of test signals for checking out the performance of the converter/receiver rig.

Conclusion

I am satisfied that the converter system works very well for frequencies in the LF range. It incorporates the tuned loop antenna and can limit the bandwidth for narrow bandwidth mode of signals. With the receiver and converter circuits all correctly tuned, I did not notice any undesirable heterodyne beats or cross-modulation effects.

The test rig was made up using a balanced mixer and VFO recovered from a different project. Whilst these worked extremely well to prove the system, some further effort is envisaged to reduce the component count and simplify the whole LF converter. I will pursue the option of using the NE602 balanced mixer later on.

References

1. Lloyd Butler VK5BR — VLF-LF and the Loop Aerial — Amateur Radio, August 1990.
2. John Adcock VK3ACA — The day we crossed the Tasman on Long Wave — Amateur Radio, April 1993.

18 Ottawa Avenue, Panorama, SA 5401

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WIA News

Coast Guard ends Morse Code

The United States Coast Guard has closed down its Morse Code operations on 500 kHz. The final CW transmission ended an era at 0000 UT on 31 July 1993, according to the *W5YI Report.*

Coast Guard operators first began listening for distress signals on 500 kHz at the turn of the century. The Service set up its permanent station almost 70 years ago, to monitor 500 kHz on a continuous basis.

Officials said the advent of satellite communications and digital technology had made Morse obsolete on the high seas.

A misty-eyed Coast Guard radio man tapped out the final 73, saying *"we now look forward to serving you on the next generation of communications equipment and systems via the Global Marine Distress and Safety System (GMDSS)."*

1994 Callbook

The 1994 Callbook was published in October, produced by the WIA Federal Office under direction of Production Editor, Bill Roper VK3BR. Supplies have been despatched to all Divisions, so inquire from them if you wish to order a copy for yourself or copies for your club.

A Call to all Holders of a Novice Licence

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Getting a Multiband HF Vertical to "GO"! (Part 1)

David "Doc" Wescombe-Down VK4CMY/VK5HP describes his experience with a useful vertical antenna*

Vertical aerials are conventionally mounted perpendicular to the surface on which they are erected and often appear mounted on the ground, vehicle or boat surfaces or above ground on a mast or tower. In describing one of the latter variety for interested parties, it would be opportune to consider six FALLACIES surrounding these RF radiators.

FALLACY ONE — vertical aerials are space saving and ideal for small suburban lots. Yes, that is what the manufacturers would have us believe, but NOTHING COULD BE FURTHER FROM THE TRUTH! Verticals of proper proportion take up much more space than dipoles, G5RV, Zepps, beams or quads. A good ground system for a short vertical (less than 7/16 wavelengths long) takes much more space than a dipole unless installed over salt water.

All the literature confirms that the quality of the reflecting ground system (up to 1/2 wavelength from the aerial base) is important for aerial efficiency. Radials serve to collect return currents from the vertical radiators. The Brewster angle will be affected by the ground quality for more than 1/2 wavelength from the base of the radiator (assuming ground mounting). A good ground for a long distance from the aerial will facilitate a low Brewster angle which will result in a lower wave angle with respect to the horizon. Ground conductivity as far out as 100 wavelengths in the target direction will affect radiation angle.

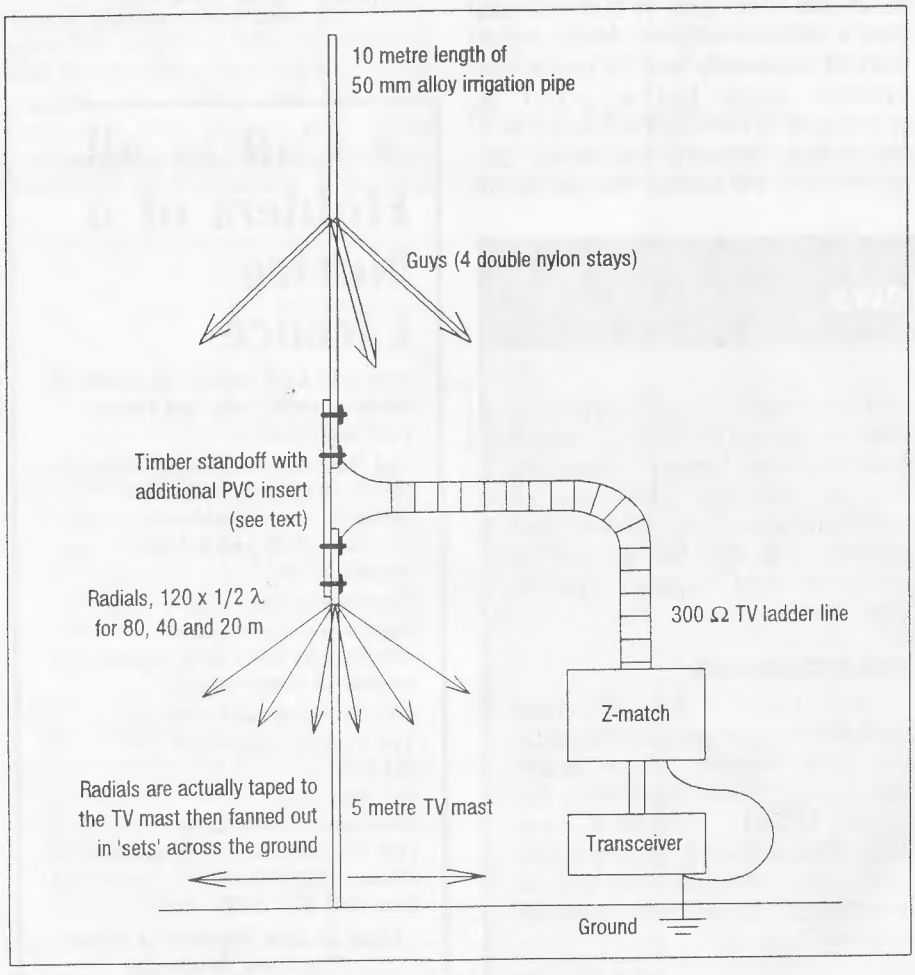

Fig 1 A versatile, multi-band vertical antenna.

FALLACY TWO — manufacturer's instructions would have us believe four radials per band are optimum. Adding radials from this basic four to ninety six will improve a signal by 3.9 dB over poor ground, 3 dB over average ground and about 1 dB over salt water (which is already an excellent ground to have). Many long radials will improve the radiated wave angle and Devoldere ON4UN (1987) states that a lowering of up to 10 degrees can be achieved with 120 radials each 0.5 to 0.6 wavelength long.

Installing strips of chicken wire in different directions on top of the ground also helps reduce ground losses, as will a 3 m² metal plate (aluminium, brass or copper) beneath the aerial base.

FALLACY THREE — the diameter of radial wires is not important.

With a small number of wires (eg 8 per band) the heavier the gauge used, the better. If many wires are used, the return current is able to be spread over many more paths and so wire gauge becomes less important. The author uses 7 strand bare copper for the 80 m radials and heavy gauge insulated stranded copper wire for the 40 m and 20 m radials wherever possible. Due to the amount of wire required, it became necessary to use recycled auto electrical winding wire, relying on the enamel insulation integrity.

FALLACY FOUR — ground rods are desirable at the aerial base and at the end of each radial.

Ground rods are necessary for a good DC ground but are almost non-contributory as RF grounds. They would, however, constitute a minimum RF ground zone for terminating certain types of wire receiving aerials (eg Beverage) or when highly conductive soil exists.

FALLACY FIVE — burying the radials is preferable.

In fact research has shown that ELEVATED radial wires make a better ground system than buried wires. This is because the return currents do not have to negotiate the higher resistance soil if the wires are elevated. Next best is to use INSULATED radials on the ground surface. If they MUST be buried, then try to locate them in the top 50 mm (2") of soil.

How many radials to use? Ensure that the tips of adjacent radials (for the same band, of course) are separated by a distance no greater than half the height of the radial system above the ground.

FALLACY SIX — burying chicken wire or fencing wire mesh offcuts assists the ground system.

Any ferrous material, even if galvanised, will last only a very short time in the ground. Corrosion acts very quickly. In any case steel is not a good RF conductor.

WHAT ELSE?

INSTALLING A RADIAL SYSTEM AT GROUND LEVEL — cut any grass or meadow hay really short at the end of the growing season in your area, then lay the radials flat on the ground, anchored as appropriate with small tent pegs. By next growing season the grass should have completely covered the wires and normal traffic and/or mowing operations will be possible.

A MULTIBAND VERTICAL — the author has been using QRP (1 to 30 watts input) to a versatile yet economical vertical aerial on 80, 40, 20 and 15 metres as shown in Fig 1.

The radiator, 1/4 wave on 40 m, had 20 radials per band initially and has consistently succeeded in DX pileups on 40 and 20 metres in spite of the low power applied. Usually only monoband directive arrays and/or amplifiers beat the vertical on air. This antenna, now re-located to a new QTH over 900 metres above sea level, is the same basic construction, but with much more real estate available (10.5 hectares) has 120 1/2 wave radials per band. These are "piggybacked" in sets of 3 (80, 40 and 20 m) one for each band and taped together to act as a counterpoise network rather than a "solder-everything-together ground mat". All wires are insulated from each other. Fed with 300 ohm open ladder line, the system is resonated by a Z-match for the desired band of operation. The aerial tunes easily on each band and results have been most gratifying. Since 50 mm diameter alloy irrigation pipe is used as the radiator, bandwidth is excellent and the system tunes across all the allowable spectrum in each case.

"The radiator . . . has consistently succeeded in DX pileups on 40 and 20 metres in spite of the low power . . .

The radials are brought down the TV mast support (taped to it) to ground level, then fanned out in "sets" across the ground surface.

A halved section of 50 mm external environment PVC piping 30 cm long is used as an additional insulator between the radiator and the mounting board. Radial wires in this case are a mixture of 7 strand copper aerial wire, bits and pieces of plastic insulated wire, and a large quantity of discarded windings bought from an electric motor rewinder for $10 — these are all enamel insulated.

By the time this makes print a full-size 1/4 wave 80 m ground plane will be similarly installed (similar feed, similar construction).

The author sincerely thanks those who have provided "on-air" evaluation assistance both locally and overseas, especially VK5AAQ, ZL4QY, VK2DBI, VK2GRN, ZL1BKI, VK6VC, VK6PJ, W6PM, SP9FF, and K72X/MM. Additional discussion is welcomed (via PO DALVEEN QLD 4374) and for the follow-up reading try:

"Low Band DXing" by John Devoldere ON4UN (ARRL)

"Novice Antenna Notebook" by Doug De Maw W1FB (ARRL)

"W1FB's Antenna Notebook" by Doug de Maw W1FB (ARRL)

**PhD Grad Dip Ed*
RNARS 1464,
QRP 221 C/o Post Office Dalveen QLD 4374

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Latest on New Amateur Licence Conditions

The following letter was received by fax at the WIA just as this issue of Amateur Radio was being put together.

Spectrum Management Agency
R91/65
9th November 1993
Mr Bruce Thorne
Federal Secretary
Wireless Institute of Australia
PO Box 300
South Caulfield
VIC 3162

Dear Mr Thorne,

Thank you for the Wireless Institute of Australia's recent request for advice on the current status of the proposed amendments to the conditions applicable to the Amateur Service. The Spectrum Management Agency (SMA) is conscious of the interest of the Amateur community in the new arrangements and we are also keen for them to be put into effect.

As you aware, the proposed changes included a general simplification and reduction in the number of licence conditions and the introduction of an additional class of licence. As advised in Gwen Andrew's letter of 1 February 1993 to your predecessor Mr Roper, it was anticipated that these changes would have been implemented on 1 July 1993.

Unfortunately, the changes necessary for the introduction of the proposed Amateur arrangements were not able to be included in the package of subordinate regulations and instruments involved in the introduction of the Radiocommunications Act on 1 July 1993 and the establishment of the SMA.

With the new legislation and the SMA successfully established, outstanding matters, such as the revision of the Amateur operating arrangements, can now be finalised. The next opportunity to make the legislative changes necessary to implement the new Amateur arrangements will occur in the autumn sittings of Parliament next year.

As soon as final details of the proposed legislative changes are known, the SMA will make them available for publishing.

Yours sincerely,

Geoff Hutchins
A/g Executive Manager
Business directions Group
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Field Day Preparation

Chris Davis VK1DO discusses all the factors involved in successful field day preparation*

The keen field day operators who have made enormous efforts over the last few years have been justifiably disappointed with the level of operation elsewhere in terms of other similarly equipped VK field stations. The lack of participation on the local VK front has led many stations to make significant efforts to equip their stations to gain the majority of their points from overseas stations on 14 MHz etc. The current sunspot cycle will make 14, and certainly higher, pretty poor picking during the '94 John Moyle field day contest.

Some of this advice might seem to you like teaching old dogs new tricks or teaching your grandparents to suck eggs. I am fairly convinced that many people have such a lack of experience in camping and portable work generally that a little general advice could be invaluable to many operators and hopefully inspire them to feel confident to make plans and participate. It is no longer reasonable to presume that Australians are naturally skilled in bushcraft and safety; twenty years ago I met people who had never looked at the stars let alone slept outdoors. I can't imagine that this trend would have improved. If you do feel I am preaching to the converted then I look forward to hearing your field station during the contest!

This is an ideal time to drum up more interest in this exciting and satisfying facet of our challenging hobby. Field days call upon your energy, your initiative, your team work skills, your organisational skills, your operating skills and your ability to want to have a go!

In some amateur communities there is a tendency to simply philosophise about field days and dream along in a state of suspended imagination until a few weeks before the March weekend in question. Suddenly, without apparent warning, the event has sneaked up on you and it is impossible to alter social appointments, organise gear, etc! The following suggestions could form the positive framework for a first foray into the field or a reminder list for more experienced teams.

"Field days call upon your . . . ability to want to have a go!"

A brief summary of the aims of a field day contest weekend is:- Single operators or groups required to emulate the conditions that apply in the event of an emergency (ie portable power supply, no more than twenty four hours preparation on site prior to the start of the contest). The rest of the more specific description is contained within the rules which are published prior to the March contest each year. Please read them!

Your choice of site might be influenced by its outlook for VHF, its abundance of trees for HF antennas, or perhaps a prominent fire tower to aid in raising antennas, etc.

Sites

Choosing a site for use in March of each year often has the added complication of total fire bans which could prevent your access to certain hilltops. Some sites require permits and are best obtained long before the day. Arriving to find your dream hilltop barricaded by a locked gate or duty fire officers is a very disappointing start to the weekend, particularly if other options are dramatically inferior or distant. Understandably, these personnel, who are often volunteers, have strict instructions as to who can do what in the forests and national parks. It doesn't matter how well intentioned you are, if no prior arrangement has been made you will be all dressed up with nowhere to go.

Approval to operate within forests and local national parks might be given with certain caveats such as independent toilet facilities, no fires, removal of rubbish, no deforestation, some fire fighting gear etc, etc. Some of these caveats might be contingent upon the size of the group. Estimating the total number of people who are attending a site over the twenty four or thirty six hour period might create the impression of such a crowd that you will be hard put to comply with all requirements or convince anyone to issue a permit at all.

Count the number of key people who will be on site, eating and sleeping. If the operation needs to be scaled down in line with specific guide-lines, don't delete the site, contemplate how you can best

WIA News

Lunar Repeater

The Project OSCAR Group of Northern California has proposed installing the first amateur repeater on the moon. Project OSCAR is the group that built and orbited the world's first amateur radio satellite.

During recent meetings, says the *US Westlink Report* (No 655), the organisation decided to revive "Project Moonray" to take amateur radio into the 21st century.

Moonray is short for Moon Relay — a concept first proposed by W6OLO back in 1965. The idea was to build a repeater that would fit under the seat of the Lunar Rover. But, the project was shelved after the US Congress cut funding for manned Moon missions beyond Apollo 17.

No specific schedule for establishing Moonray has been offered by the Group, although organisers hope to get the project off the ground by the turn of the century — only seven years and one month away (to 2001).

comply by pooling vehicles and equipment so that you are compact and efficient.

Clothes

A few general areas to bear in mind. Firstly your clothing etc. Clothing ranging from shorts, tee shirts through to long shirts, tracksuits, jumpers and rain coats are vital as often the sites we tend to select for field events are hot and dry by day and surprisingly, if not distressingly, cold at night. Sunburn protection is vital if you are to be of any help after the site is established. Sun-glasses, hats, insect repellent and fly killer to eradicate that horse fly that decides to invade your tent. At least one well equipped first aid kit for the group, preferably with at least two members versed in how to use its contents. I say at least one as it is often the case that the vehicle containing the kit might have gone back to town on an errand just when the kit is required.

Not only is wet weather clothing desirable, but a change of clothes in the event of a drenching will make you feel more able to persevere in the event of cold wet conditions. On the whole, you can't take too much clothing in the form of refreshing changes of shirts, underwear, and socks with an extra pair of shoes. No thongs and no sandals, being serious about sunburn protection and fly and insect repellent isn't being weak or wimpy, just practical.

Food and Drink

On the food side. Try not to change your diet dramatically from what you know you are able to eat. Some canned foods, most mince meat, and some chocolate is excessively full of preservatives, MSG, or caffeine such that the dramatic change might bring on migraines, upset tummies or worse. Fruit is an excellent form of slow release energy which, combined with sandwiches and plenty of fresh water, will keep your blood sugar levels steady and enhance your capacity to get to sleep and survive on less than usual sleep. Large cooked meals take a lot of time, usually aren't digested adequately, and place greater demands on resources.

Generally you will find cola or other high caffeine drinks are poor refreshers and are excellent recipes for sun stroke as they provide easily broken down sugar forms which alter the blood sugar level with rapidly oscillating excursions. Incidentally, cola drinks are not the only soft drinks high in caffeine. Some lemon drinks produce the adrenalin rush they are so proud of by emulating ten cups of coffee in one can! Fruit juice, or even plain water, is the best replacement for the water the body loses when faced with long term exertion in hot dry conditions. It should be combined with complex carbohydrates like bread.

"Being serious about sunburn protection and fly and insect repellent isn't being weak or wimpy, just practical."

Transport

What about the dreaded motor car? Have you done anything to your car which vaguely emulates servicing of late? Spare tyres, tyre changing gear, inflation levels of all five tyres, oil levels, water levels, radiator condition to cope with the possibility of an extended slow, grinding climb perhaps towing a trailer in warm conditions. Condition of fan belts, water pumps, radiators and so on are worth investigating prior to a problem particularly if a breakdown represents the blocking of a single lane mountain trail.

What do you need to operate your radios comfortably in terms of furniture and accommodation? Collapsible compact tents which have had their assembly rehearsed and have known waterproofing performance are often a safer bet than the cumbersome but luxurious features of a caravan. Towing a van suits the experienced but is dubious, if not plain dangerous, for someone attempting their first excursion on uncharted roads. Caravans can often represent more trouble than they are worth particularly with rough terrain and poor access roads to many sites.

Furniture

Collapsible tables, chairs, and ground sheets will usually allow the establishment of a comfortable operating position which remains dust and water proof with some rehearsal before the event. Tents often seem bigger than they actually are until you lay out a couple of square metres of operating space, enough to accommodate the radios, log sheets etc. Lamps for night use require numerous spare globes wrapped in shock resistant cardboard. Yellow light often lights adequately and is less attractive to mosquitoes. Fluorescent lamps, while effective, are RF noisy and more fragile than would first seem. You are easily able to keep half a dozen spare forty watt incandescent globes on hand, however, spare 15 watt fluoro tubes are less likely. Being able to hang a bayonet fitting, with some sort of casing like a car light, from the roof of the tent proves an effective and portable lighting system. Gas lamps, while bright, are fragile, expensive, noisy and hard to install reliably.

JPS COMMUNICATIONS, INC

NIR-10 NOISE/INTERFERENCE REDUCTION UNIT

Allows the reception of difficult to read signals.

It has 4 operating modes:

NIR (Noise and Interference Reduction Mode).

PEAK (PK) mode, very effective at reducing white noise Notch Filter (NF) mode, removes multiple heterodynes.

Bandpass mode in which the unit operates as a digital audio filter with switch selectable bandwidths. Either the PK or NF mode may be used in Bypass or NIR modes. In Bandpass mode the audio bandpass may be moved anywhere in the 300 to 400 Hz range via a front panel control.

Bypass Mode removes all processing delay, but allows the PEAK and NOTCH functions to be used in "REAL TIME".

It is connected to the speaker, phones or live audio output of the receiver.

For further information contact.

ZRV ELECTRONICS PTY LTD

10/29 Peel St ELTHAM VIC 3095.

Tel BH (03) 439 3389

AH (03) 431 0667 FAX (03) 439 2483 ACN 054 992 406

Agents for DRAKE R8 World Band Radio

Keeping a battery torch handy will help you to stumble out to the generator when the juice runs low.

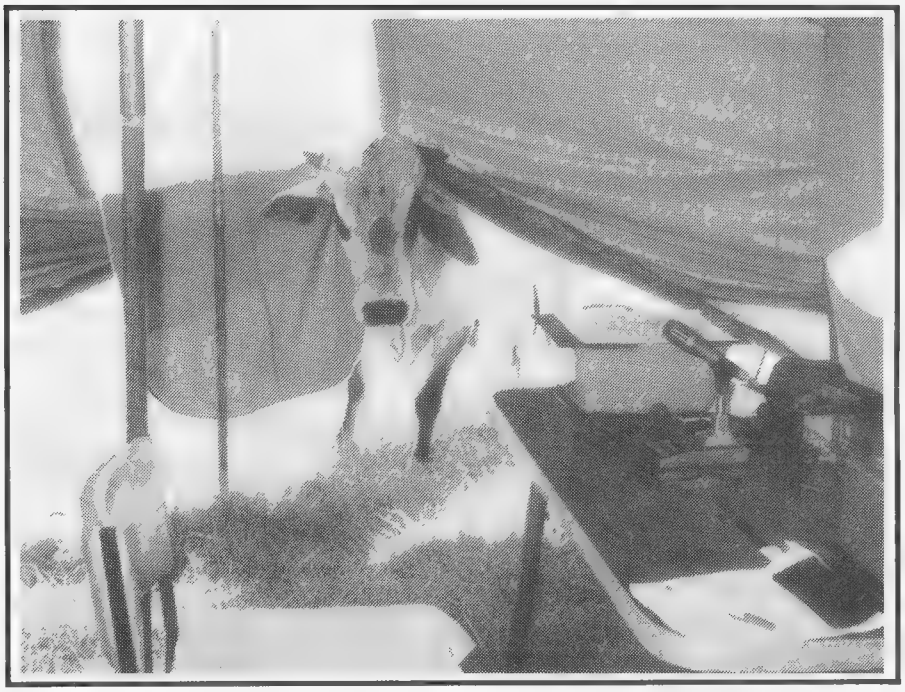
If you think you can survive without an air bed, don't count on a great deal of sleep. The hilltops are notoriously rocky and uncooperative in accommodating your bony frame. An airbed and a sleeping bag, even in relatively summery conditions, are vital. Even if the airbed leaks during the night, you can be lulled into the arms of Morpheus unaware that you will wake on rocky terra firma.

Power, Tools and Antennas

So you have got there, tents are up, tables, chairs, sleeping arrangements and food storage and preparation are all okay. What about the radios? The radio gear needs a thorough checklist of its own. Have you left the detachable power cord at home? What about a microphone, accessory plug which disables some radios, patch cable to convert your BNC, SO239 or RCA sockets to connect to the field antennas, extension leads (preferably heavy builder's cable if the runs exceed ten metres), power boards with adequate outlets (bearing in mind the extra space that adaptors straddling two sockets often use up), enough outlets for radios, power supplies, rotators, lamps, perhaps a soldering iron, and so on?

Check what the ratings and sizes of your radios' various fuses are. Fuses are often rated close to the operating margin and fail when the gear gets an unusual source of mains power or the surges of a spluttering generator. Many radios have a mains fuse on the back panel and possibly another half a dozen low voltage fuses inside on the power supply board. The manual might help. If not, buy yourself a kit of three or four different fuse shapes and sizes and a couple of each amperage, 500 mA, 1 A, 2 A, 5 A, 10 A, etc. A useful kit to include in your tool box as a day to day item anyway.

Apart from the range of antennas, feedlines, etc that your group divvies up responsibility for amongst the team, each person needs a minimum basic tool box of screwdrivers, spanner, pliers, side cutters, knives, soldering gear and a multimeter. The old forty watt toy iron is okay if you can be patient. However, someone on the team needs a big iron like a Scope to cope with the loss of heat outdoors and the massive heat required on antennas and connectors at times.



Larger creatures than mosquitoes may also disturb a Field Day! Mark VK4KEY was participating in the 1991 John Moyle Field Day with the City of Brisbane station VK4WIE when the young Brahman bull appeared, at Mt Wolvi near Gympie. VK4WIE went on to win the multi-operator 24 hour HF phone section, apparently doing better without the bull!

Specific attention to antennas is probably a matter of personal choice. However, a general recommendation is to take nothing on field day that hasn't been tested or is at least identical to something you have had first hand experience with. If you aren't certain about your rusty vertical or your bent, tired beam, leave it at home, make up a dipole and erect it at home beforehand. Check that it generally works with the feedline you intend to use on the day with sufficient built-in margin to shorten or lengthen the affair if the on site performance is radically different from your dress rehearsal. An antenna tuning unit will accommodate all but the most dramatically faulty antennas and aid the prevention of interference between the different bands which must allow simultaneous operation.

The generators you beg, borrow or hire can take two forms. A couple of relatively big ones, like 5 kVA each or one enormous 15 kVA. The disadvantage with the enormous one is, if it stops, you are completely stopped. Also, it is usually an expensive brute on fuel and towing difficulty. Two or three 3.5 or 5 kVA machines will run efficiently and, in the event of mechanical breakdown, the whole station could probably survive on just one. Baby 900 watt lightweight generators will power only the lowest power station or one supported by 12 volt batteries being floated. A standard 100 watt HF radio will not quite run on a 900 watt generator let alone extra lights or other rigs. If you don't believe me, read the label on the back and then bear in mind that many of the ratings for portable lightweight generators are specified for 60 cycles lighting mode where voltage regulation and so on isn't important.

Final Arrangements

Perhaps we have covered sufficient points in terms of practical detail. A few points in conclusion. Keep logs in the mode that the contest requests (ie UTC or local, normally UTC), remind each operator to wear their

watch and clarify that they know how to convert to UTC, have adequate pens (pencils are not okay for logs), prepared log sheets that have just the detail required for that contest, and a clip board to prevent the wind removing your hard earned contacts. An acquaintance with the rules is preferable before the contest. Nothing is more annoying than the clown who claims he can't work you or vice versa holding up the proceedings when they haven't read the rules.

Don't underestimate travelling time to your chosen site. Visit the site beforehand. Time and note the duration of the trip and then add the possible delays likely to be encountered while towing or heavily laden.

Aim to arrive in comfortable time to erect tents, put antennas in operating positions, etc, and ideally have time to have a relaxed lunch prior to the contest starting. To give you an idea, setting out around 7 am is not too early to take in only an hour's travel, set up, and start at 2.00 pm. Some people like to dawdle out to field days. However, they are often then trying to work in the heat of the day without time up their sleeve. Agree on when the team will travel, breakdowns or directions are then easily catered for and the team work can begin together without rushing.

Above all, field days improve your capacity to improvise and adapt but being prepared makes for more fun and a tendency to look forward to doing it again. Will you give it a try? If it's your first effort, organise a small team of people you know you will enjoy being with and do a good job on a small scale. Each exercise that you complete with satisfaction and pride will enhance your interest in going out again on a larger, more ambitious scale. Good luck and see you in the '94 John Moyle Field Day Contest.

123 Hawkesbury Cr Farrer ACT 2607

WIA News

The Exam Service

There are now more than 500 accredited examiners around Australia (as at 30 September 1993); some 63% are WIA members.

Since the WIA accepted responsibility for amateur radio examinations in 1991, 4063 candidates have sat for examinations under the WIA Exam Service.

During November, the Spectrum Management Agency conducted an audit of the Exam Service. A report on the SMA's findings will be ultimately received, so we'll bring news of that to you in a future WIA News.

amateur radio action

"Hουσε αδωερτισεμεντΠ φορ Αματευρ Ραδιο Αχτιον μαγαζινε το αππεαρ ιν ΩΙΑ φουρναλ Αματευρ ΡαδιοΠ."

For subscription details to just about anywhere, phone Grant Manson on (03) 601 4222

If all this looks Greek to you, perhaps it's because you're not reading the authoritative source — Amateur Radio Action magazine... at your local news outlet every fourth Tuesday.

RANDOM RADIATORS

with Ron Fisher VK3OM and Ron Cook VK3AFW.

Balcony Antennas

Some little while ago Gerry VK2BMZ forwarded a book published by the JA CQ Ham Radio group. He suggested that the title was "Verandah Antennas", but the more appropriate title seems to be "Balcony Antennas", as there are very few verandahs and a great many balconies in Japan.

The Japanese are determined and resourceful so living in a small flat many floors above ground is no impediment to enjoying amateur radio. Australians are well known for ingenious repairs using scrap wire etc, so while some of the Japanese ideas might be adopted directly, we have no doubt that they will at the least be a source of inspiration for specific solutions to limited space antennas.

One of the striking features of the book is the large number of advertisements for useful antennas and accessories for apartment dwellers. There is a variety of standoffs, small units to mount on the balcony rail and fitted with a stub mast for mounting antennas. There are larger steel structures designed to mount on the wall and extend beyond the balcony. Some of the mounts are really short tower sections and most will take a rotator. There is also an array of clamps, telescopic tubing and adaptors.

Also there is a range of roof mounting hardware ranging from simple clamps, guys and small towers. Of course there is a very extensive range of antennas, ranging from single and multiband verticals to multiband yagis for frequencies ranging from 1.8 to 1300 MHz.

"When not in use the antenna is swung against the side of the building . . ."

A company called Delica advertises a self-contained rf bridge with digital frequency display and capable of operating from 1.5 to 150 MHz. A smaller bridge is available for connecting to an external oscillator and digital dip meters are available for operation from 0.1 to 470 MHz. That's enough of the adverts. We will bring you some of the ingenious antennas described in this book over the succeeding issues.

Multiband Balcony HF Antenna (Figs 1 to 5)

One of the simplest HF antennas described is a horizontal 5 m aluminium rod. This is one of several antennas described by JI1XPB. It consists of two telescoping sections mounted to but insulated from a short vertical mast. A length of cord runs from the top of the mast to the end of the thickest section of the rod, thereby reducing sag and minimising the load on the end support. An ATU is used in conjunction with a short connecting wire to resonate and match the monopole. The mast, balcony and water pipes should be connected to form the earth, or loaded radials could be used.

When not in use the antenna is swung against the side of the building, thus minimising its visual impact. In many Asian countries it is customary to hang washing on poles protruding from balconies, so this antenna could have a dual purpose and be an effective "invisible" antenna. The VSWR can be kept below 1.5:1 on 7, 14, 21 MHz and less than 2:1 on 28 and 3.5 MHz, although the bandwidth is limited on the latter band.

The antenna is an end fed half wave on 28 MHz and this is the only band on which a good ground would not be essential. It is a 3/8 th wave on 21 MHz and a quarter wave on 14 MHz. On 7 and 3.5 MHz the ATU provides end inductive loading. It should work satisfactorily on the "WARC" bands.

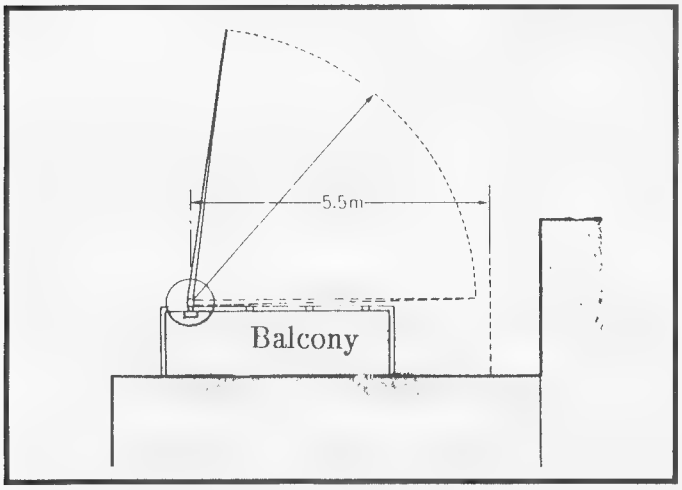


Fig. 1 Plan view of antenna mounted on balcony with rotator.

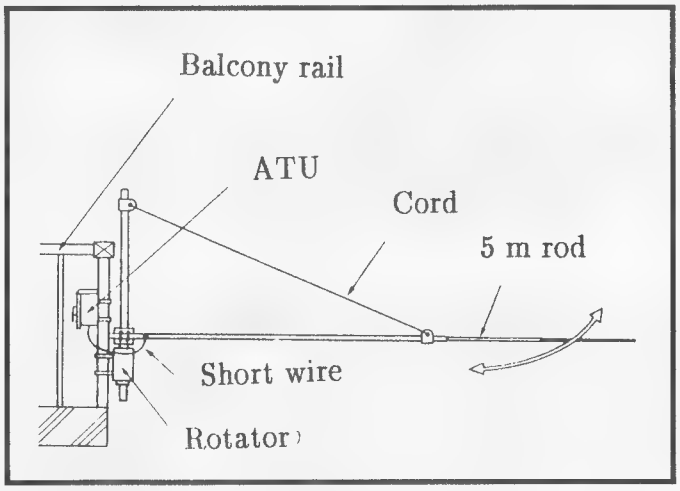


Fig. 2 Elevation of rod antenna on balcony.

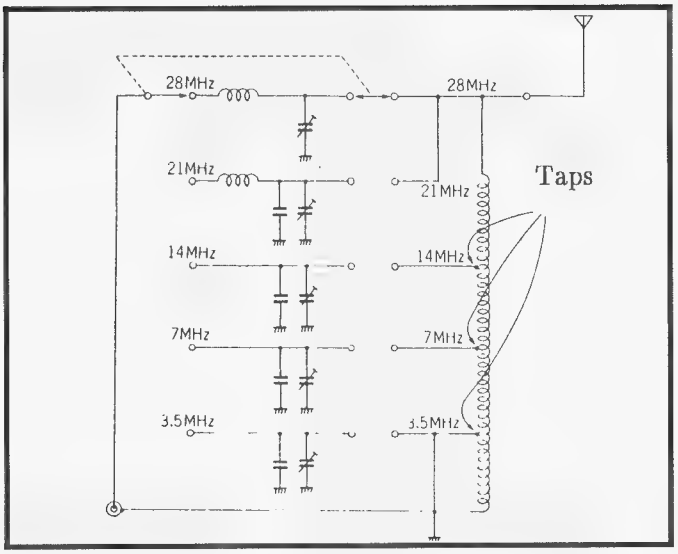


Fig. 3 ATU circuit

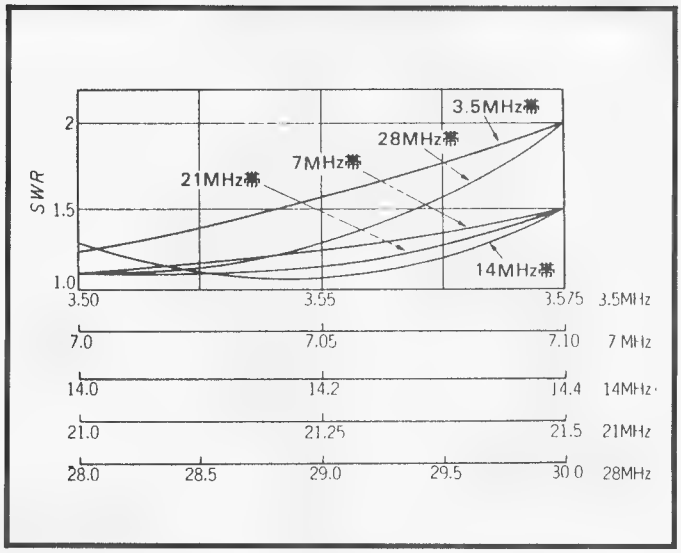


Fig. 5 SWR with ATU pretuned.

Unfortunately, although the schematics are clear enough, no mention of actual values of the components is given, or at least not in a form comprehensible to either Ron. Still it is worth trying as a useful HF antenna for restricted space, and if you prefer you could hang a flag on it instead of your washing.

The book gives some graphic warnings about working on antennas on balconies. The number one rule is tie one end of a cord onto every tool and part and tie the other end onto a fixture so that when something is dropped (not if) it will not injure anyone or anything below on impact.

The old J Pole

For 2 m operators the old J pole (no Paul not the J curve!) is a good standby. JH5MNL describes this and several other vertical configurations. Figs 6, 7 & 8 show several different configurations, the difference being due to differing velocity factors of the cable used.

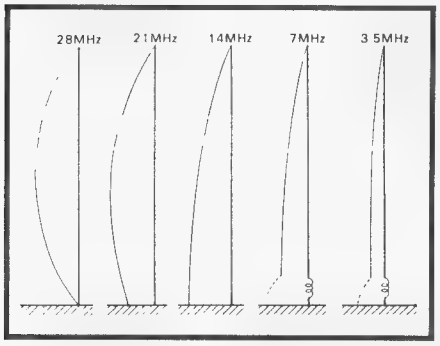


Fig. 4 Current distribution on rod.

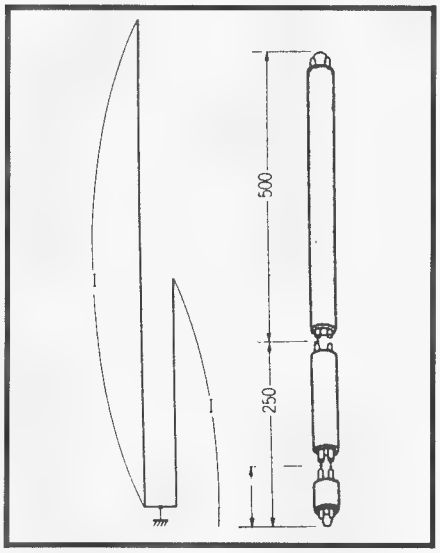


Fig. 6 2 m J-pole nominal sizes

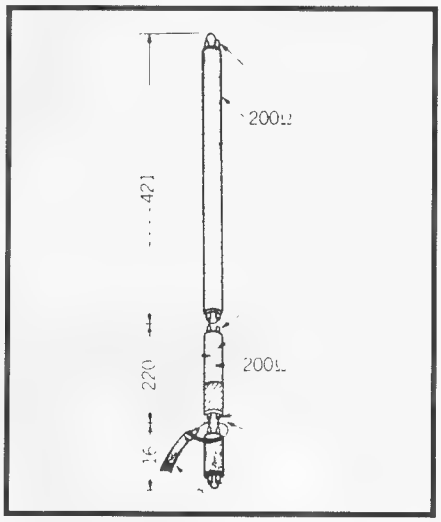


Fig. 7 2 m J-pole.
Dimensions for 200 ohm twin feedline with velocity factor of 0.8. Coaxial 50 ohm feedline is tapped 16 mm from bottom.

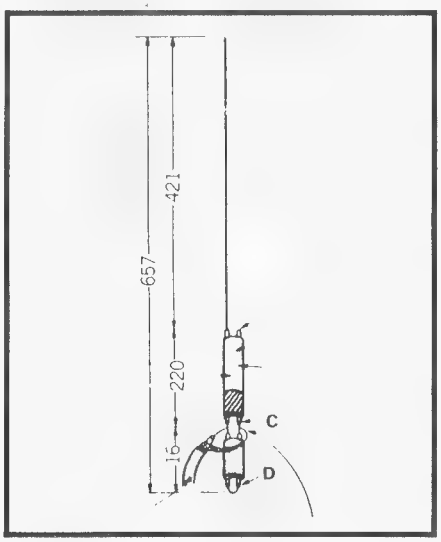


Fig. 8 2m J-pole.
Top section replaced with a whip. It may be best to start with it at around 525 mm and prune it back to get the best SWR.

For mounting on a pipe the J pole should be enclosed in a length of plastic conduit. A short length of plastic cord can be used to keep the antenna straight.

Loaded Whips give 4 Bands (Figs 9 & 10)

The reader may be aware of the old "pitchfork" arrangement whereby three loading coils and associated resonating whips are fitted on an adaptor screwed to the top of a 1.5 m whip. Fig 9 shows an alternative arrangement where two whips are screwed into a metal ring fitted over an insulating rod. The rod is clamped to the top of the balcony handrail. The

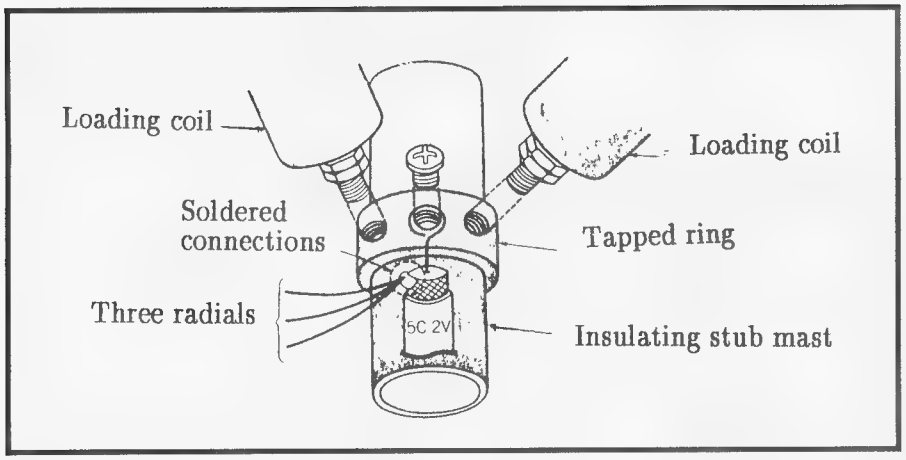


Fig. 9 Base of multi-whip antenna.

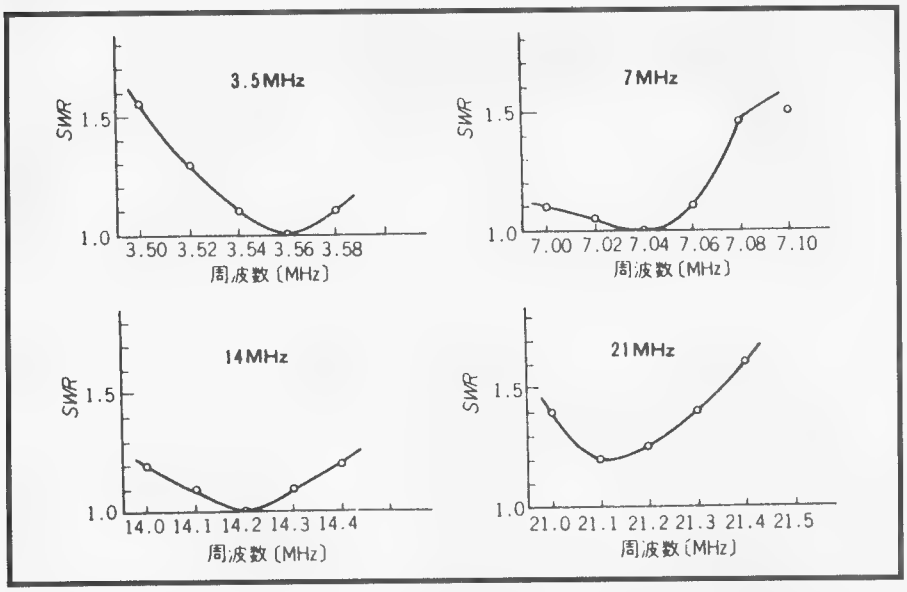


Fig. 10 SWR curves for 4 whip antenna.

centre conductor of the coax feedline connects to the ring and three radials are connected to the screen. They measure 22, 5.4 and 3.4 m for 3.5, 7, 14 and 21 MHz.

The whips shown in the article are base loaded and only two are fitted at any one time. Light weight helically wound whips should be an effective alternative. The SWR attained is less than 1.5:1 on all bands although the bandwidth is only about 100 kHz on both 3.5 and 7 MHz. This arrangement is one attributed to JH2UNG.

Bent Dipole for 40 m (Figs 11 to 13)

Another interesting contribution from JH2UNG for those with a large flat or apartment on the corner with an L shaped balcony is a dipole on 40 m. A short 2 m mast holds the feed point above the balcony rail and is placed at the corner of the balcony. For resonance a length of 10.6 m is required for each leg of the dipole but this is likely to be too long for even the largest corner apartment. The ends are therefore bent down. The arrangement shown in the sketch allows tying the ends with a plastic cord and avoids the need for heavy ceramic insulators. To assist with obtaining a good match, a 3 m long inductive stub is connected at the feed point. The 1.5:1 SWR bandwidth is about 50 kHz.

Tuneable Loaded Dipole for 7-29 MHz (Figs 14 & 15)

One of the more complex antennas in the book is described by JG1KHK. It is a dipole with variable inductances at the centre of each dipole. It appears that each dipole is 2.5 m long. The coils are mounted on a common former with a gear in the centre. A small motor drives this gear, thus rotating the coils. Spring contacts are used to make contact with the coil and rings at the ends of each coil. As the coils rotate it appears the two contacts progressively short out more or less turns, thus resonating the antenna. The coils are 32 mm in diameter and

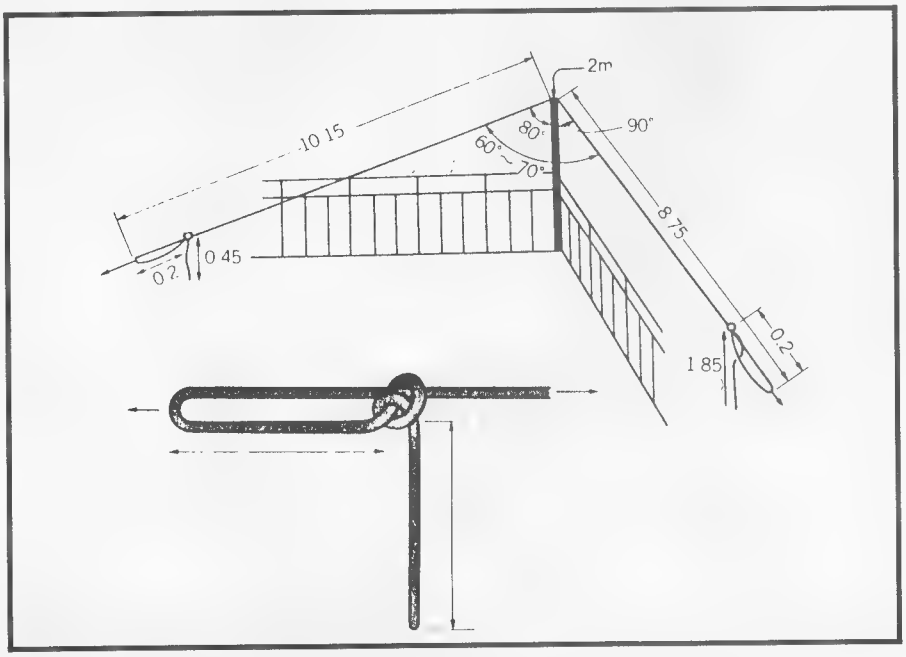


Fig. 11 General arrangement of dipole. Note arrangement for adjusting ends for resonance.

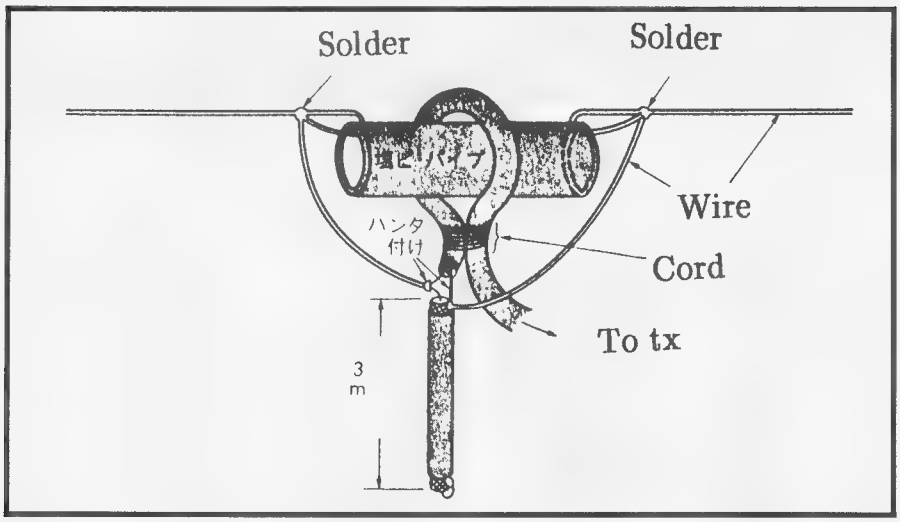


Fig. 12 Feedpoint arrangements. Note use of pvc tube as centre insulator and matching stub. Seal all open connections of coax.

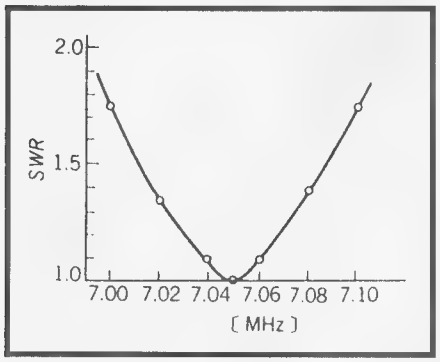


Fig. 13 VSWR curve.

wound over 105 mm using 0.8 mm diameter wire. A half nut is used to cut a thread into the plastic former to hold the windings about one diameter apart and to ensure a uniform pitch for the sliding contact used for shorting the turns. A three winding balun is used for connecting to the feeder.

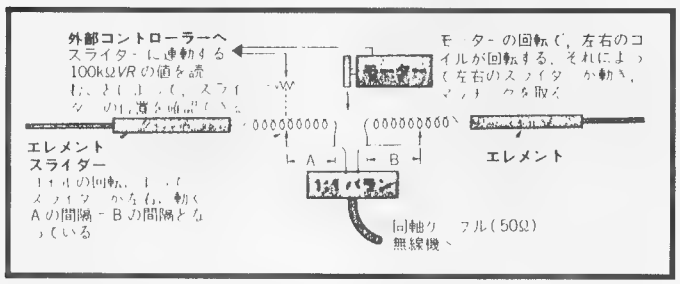


Fig. 14 General schematic of loaded dipole.

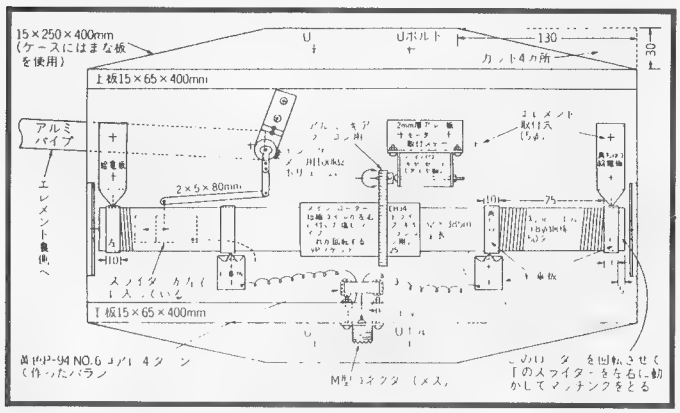


Fig. 15 Tuning arrangement.

Broad-band Monopole for 6, 2 and 0.7 m bands (Figs 16 & 17)

JP1EXE describes a broad band monopole fed against a ground plane with one element extended for operation on 50 MHz. The VSWR on both 50 and 144 MHz is 1.2:1 or less across the band and on 432 the VSWR varies between 1.0 and 1.4:1. See Fig 16 for details. Note that there are three 510 mm radials and one 1600 mm radial. The monopole is an open cage 1066 mm high and 610 mm across. It consists of two wire polygons mounted at right angles.

Four 510 mm angled vertical wires are mounted in between the polygons. While the dimensions are chosen to provide optimum matches on the amateur bands it should be a useful antenna for listening purposes from 50 to 500 MHz. In later episodes of *Random Radiators* we will bring some details of VHF and UHF antennas and some HF ATUs as well as more on HF antennas.

So its 73 from me and 73 from him.

The two Rons

BR

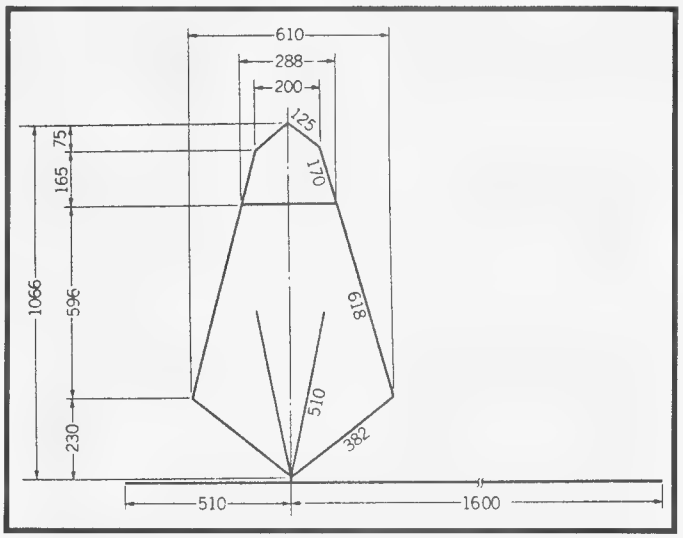


Fig. 16 Broadband monopole dimensions.

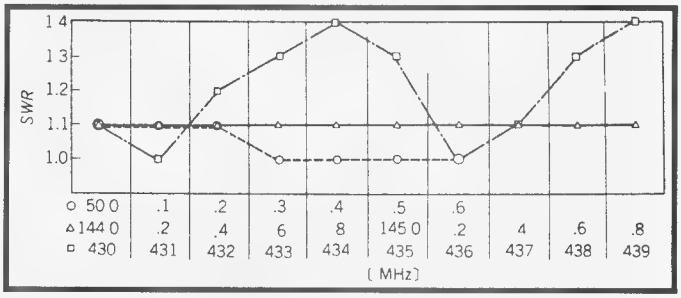


Fig. 17 Monopole VSWR curves.

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Technical Abstracts

Gil Sones VK3AUI

Two Metres and 70 cm Wavemeter

A wavemeter is a fairly basic piece of test equipment but it is a very useful piece of equipment. You can use it to check that you are in the band and you can sniff for harmonics and parasitics. You can use it to peak up equipment and you can compare the signal radiated by different aerials and transmitters. For a minimal outlay of cash, time and parts you can make a very useful piece of test equipment.

In the August 1993 issue of *Radio Communications,* the monthly magazine of the Radio Society of Great Britain, a simple two band design was featured by Sven Weber G8ACC. The design uses an Eddystone split stator tuning capacitor together with a coil and a loop plus a couple of diodes and capacitors, a switch and a meter. The meter does not have to be super accurate as it is only an indicator.

The circuit is given in Fig 1. The capacitor is shown in Fig 2 and the coil and loop are shown in Fig 3. The use of an Eddystone capacitor is not mandatory and any small split stator capacitor will do. The parts list is given in Fig 4. Remember that the parts are relatively non critical and that a good imagination and junk box will do wonders. If the junk box is empty then go to a few conventions and white elephant nights and open your wallet ever so slightly.

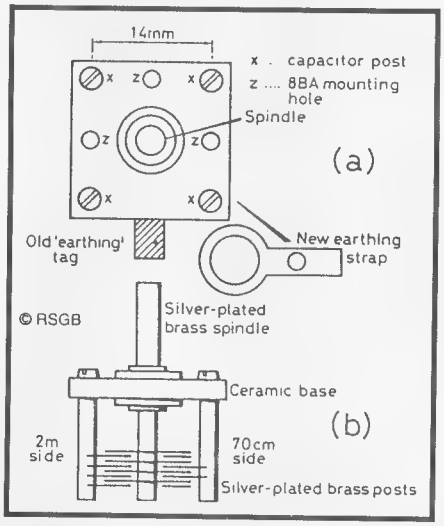

Fig 2 Construction of the tuning capacitor.

Calibration requires access to some known sources of RF. A counter and a GDO would be a good combination. Another combination would be an oscillator and a scanner. What you need is some RF to be detected by the wavemeter and some way of checking the frequency. If you don't have a counter or a scanner then you could always resort to that fine old standby of lecher lines. Look up a book if you are not familiar with them.

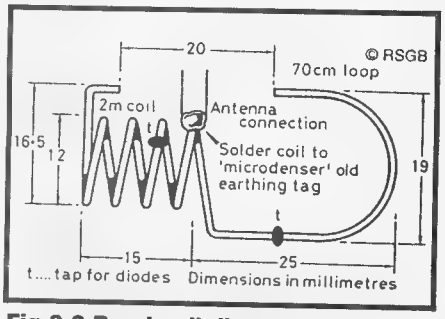

Fig 3 2 Band coil dimensions

Fig 4 Parts List
Capacitors
VC1 25 + 25 pF approx split stator
C1, C3 100 pF disc ceramic
C2 220 pF disc ceramic
Resistor
R1 8k2 0.25 W
Diodes
D1, D2 Schottky Diodes
D3 OA47

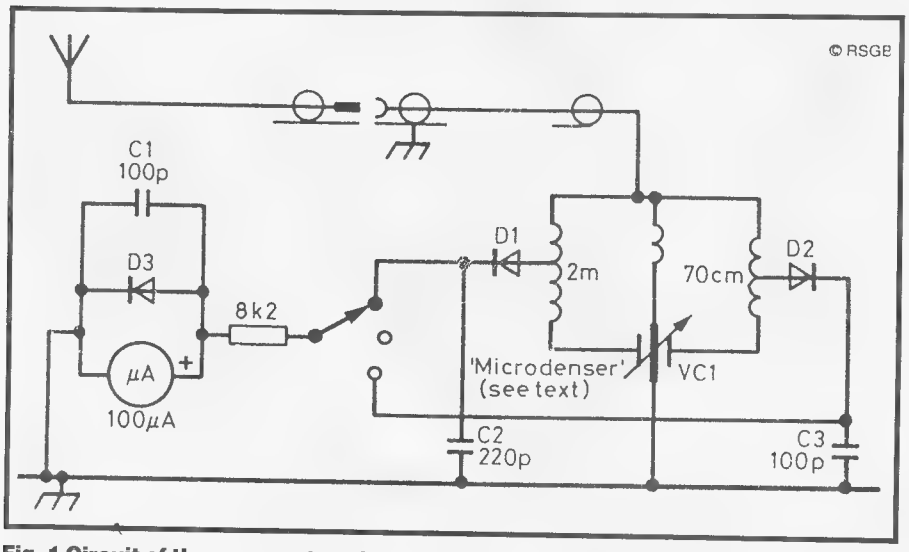

Fig. 1 Circuit of the wavemeter, showing how the split stator capacitor tunes both 2 m and 70 cm.

Evasive Noise Blanking

Noise blankers work well blanking noise but at times when the band is crowded with strong signals they can suffer. The receiver may have fantastic strong signal performance, but when you switch the blanker on other signals start to trigger it.

Mark Mandelkern KN5S writes about a technique which he describes as evasive noise blanking in the August 1993 issue of *QEX,* a monthly experimenter's publication from the ARRL. The technique relies on using a separate channel for the noise blanker. Early noise blankers did this by using a TRF on 40 MHz but this assumed that the noise picked up there was the same as that on the band you were using.

Mark uses the same front end for both the signal and the noise blanker but looks at an adjacent band for the blanker signal. This allows the signal to be picked up by the same antenna but by using a separate tunable noise channel the blanker can be tuned to an adjacent frequency which is not in use by strong stations. A block diagram is shown in Fig 5.

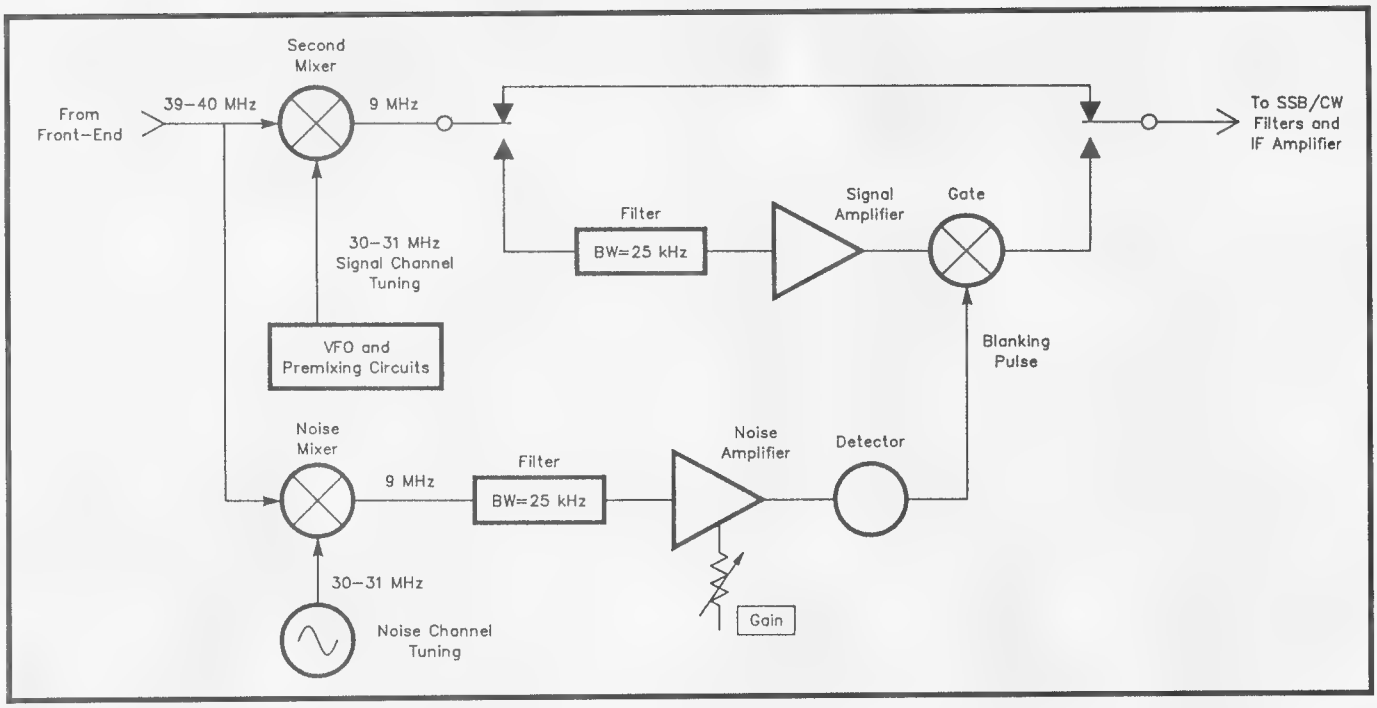

Fig 5 Block Diagram of Evasive Noise Blanker.

C1 ..... 0.047uF
C2 ..... 0.001uF
C3 ..... 100uF
C4 ..... 0.01uF
C5 ..... 820pF
C6 ..... 0.001uF
C7 ..... 0.001uF
C8 ..... 0.1uF
C9 ..... 0.1uF
C10 ..... 0.047uF
C11 ..... 0.01uF
C12 ..... 0.047uF
C13 ..... 10uF
C14 ..... 10uF
C15 ..... 0.047uF
C15 ..... 250uF
C17 ..... 500uF

R1 ..... 6.8K
R2 180
R3 ..... 3.9K
R4 220
R5 47
R6 ..... 4.7K
R7 ..... 2.2M
R8 150
XT 7020kHz
L1 ..... 10uH

L3 ..... 1mH

TR1 ..... 2N2222A
TR2 ..... 2N3553
TR3 ..... BC108C
D1 ..... AA112
D2 ..... AA112
Z1 ..... 1N4751
VR1 ..... 1K Lin
VR2 ..... 5K Log
IC1 ..... LM 386
VC1 ..... 5-50 pF Variable
VC2 ..... 8-80 pF Preset
VC3 ..... 8-80 pF Preset

T1 ..... 27 Turns 32 swg on T50-2. Secondary 3 turns.
T2 ..... Same as T1
T3 ..... Primary winding of transistor transformer.
L2 ..... 13 turns 32swg on T50-2 toroid.

All capacitors in μF otherwise specified.
All resistances in ohms. Transmit/Receive switch.
Double pole change over.

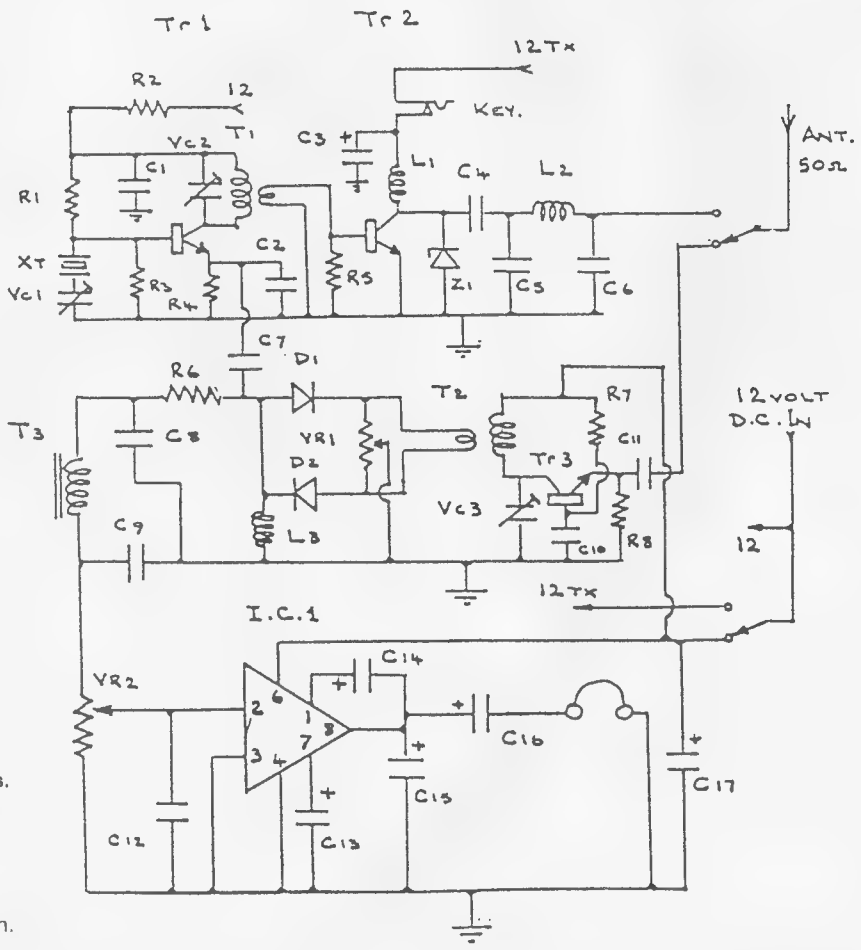

Fig 6 QRP Transceiver.

The system does require separate tuning of the blanker but that is a small price to pay to be able to use the blanker on a crowded band. The author's system was built as part of a tunable IF for a VHF receiver.

ZS5L QRP Transceiver.

A simple 40 metre QRP transceiver was described in the September 1992 issue of *Radio ZS,* the monthly journal of the South African Radio League, by Roger Davis ZS5L. The design would be adaptable to other bands and should give reasonable performance running on lantern batteries or gel cells.

The CW sidetone offset is produced by the oscillator frequency variation when the transmitter current drain lowers the battery terminal voltage. A happy side effect and a graphic demonstration of how voltage dependent oscillator stability can be.

The circuit and parts list are given in Fig 6. A simple project but capable of providing a lot of fun and education.

Roger Beep

Braam Devenier ZS6AYE describes a simple tailender tone beep in the June issue of *Radio ZS.* This produces a tone beep as you let go of the PTT button giving the other station a cue that you have put the contact over.

A very useful cue if the signals are weak and fading in and out of the noise. This fading is quite commonly experienced on VHF SSB DX.

The circuit is very simple and is shown in Fig 7. The connection of the device is shown in Fig 8. The parts list is given in Fig 9.

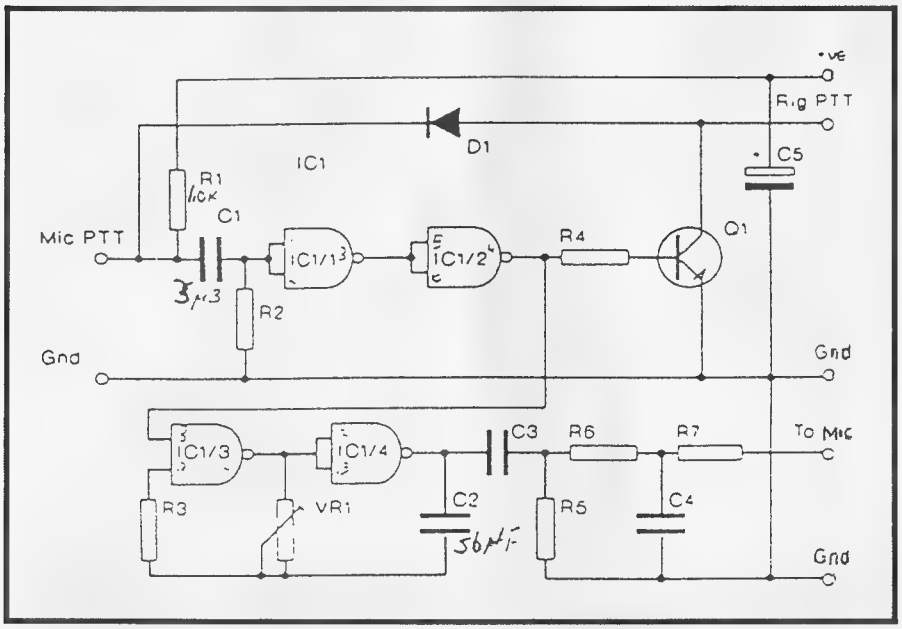

Fig 7 Roger Beep.

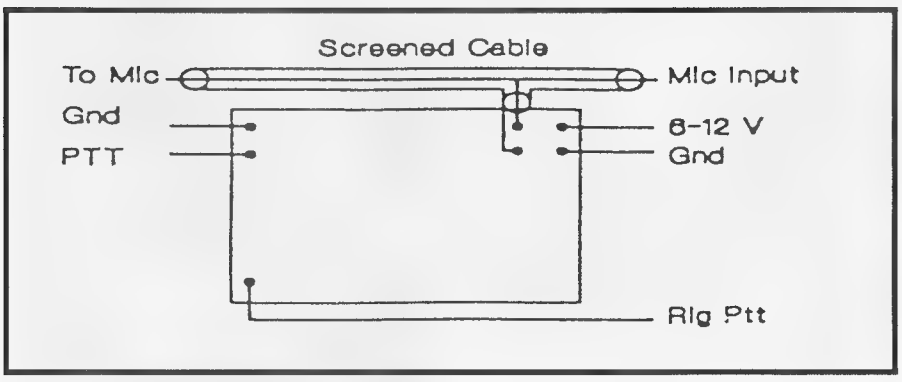

Fig 8 Connection of Roger Beep.

Fig 9 Parts List
R1 10 K
R2, R7 100 K
R3 1 M
R4 1 K
R5, R6 4K7
C1 3μ3 25 VW
C2 56 nF
C3, C4 47 nF
C5 1 μ 25 VW
Q1 BC109
D1 1N4148
VR1 10 K
IC1 CD4093
Resistors 1/8 W

BR

WIA News

Russian Callbook

A copy of the 1993 CIS Call Directory, the fourth edition published by the Octavia Co, has been received by the Federal Office.

The 323-page soft-bound edition contains the direct mailing adddresses of over 30,000 Russian amateurs plus thousands of additional addresses of hams in the Ukraine, Belarus, Azerbajan, Georgia, Armenia, Turkmenistan, Uzbekistan, Tajikstan, Kazakhstan, Kirghizstan, Moldova, Estonia, Lithuania and Latvia, according to the accompanying press release. All of the addresses are printed in both English and Russian.

The Directory also contains a list of some 500 Russian regional QSL Bureau addresses, organised by callsign prefix.

Octavia has also published the QSL Manager Review, a hardcover directory containing a listing of more than 47,000 QSL managers.

These Octavia publications are available from:

j-Com
793 Caning Pkwy,
Victor NY 14564 USA

The CIS Callsign Directory costs $US10 plus $US6 shipping, while the QSL Manager Review costs $US10 plus $3 for shipping.

Book Review

Practical Filter Design

Reviewed by John Robinson VK2XY

Author: Jack Middlehurst. Edited by Roger Harrison VK2ZTB.
Published by Prentice Hill of Australia.
Soft Cover. 270 pages. 3.5-inch disk of programs included. $39.95.

This book covers filters found in amateur radio, audio and other applications. The book's nine chapters each cover a particular type or class of filter, giving the various circuit arrangements, the filter properties (good things and not so good things) their tuning and construction details. Typical uses are discussed, and active versions are covered.

Filter types described include: Butterworth, Chebychev, Elliptic (including active Elliptic), strange beasts called GICs, Gyrators (no, not Sharon Stone on the dance floor) and switched capacitor filters. One chapter discusses such interesting variations as Linkwitz, Lipshitz, Bessel and notch filters.

This book answers all the questions you ever thought possible about filters, indicates which ones to choose for specific applications and discusses their limitations.

But the good news is that no longer do you need to have a degree in mathematics to design yourself a filter. The book includes a disk of computer programs for every filter described, to help you design the exact filter for YOUR application.

The programs are written in GWBASIC and will run on any IBM compatible PC. Program listings are included in the chapters so that you can "read" them if you're interested, and so that they may be "translated" into other forms of BASIC for use in different computers (Commodore, for example).

The book is written in an easy to understand style and is an excellent reference manual. I was fortunate to attend the book launch, which was held at the NSW Division's Parramatta headquarters, and heard Professor Godfrey Lucas VK2CJL (Dean of Electrical Engineering at the University of Western Sydney) extol the virtues of the book. He was enthusiastic not only about the content, but about the writing.

The NSW Division has it in stock in the Divisional Bookshop.

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Have you advised the WIA Federal Office of your new callsign? Use the form on the reverse side of the Amateur Radio address flysheet.

ALARA

*Robyn Gladwin VK3ENX**

The ALARA History 1975-1993. 1st Edition Mavis Stafford VK3KS, 1989. Latest Update Marilyn Syme VK3DMS, 1993.

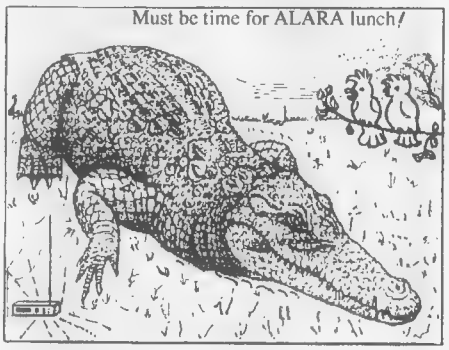
Mavis Stafford is to be congratulated for her excellent work in documenting the progress of our Association. She tells of the efforts of Norma Boyle VK3AYL, to encourage women to become interested in amateur radio and of the first nets on 21 July 1975. She then follows with chapters on the background to the Newsletter, the Symbol and the badges, the ALARA contest and the distinctions gained by ALARA members. Our thanks also go to Marilyn Syme VK3DMS, for her efforts to bring the History up to date. Copies are available from Marilyn, QTHR, for a small charge.

ALARAmeet 1996

Bev Hebiton VK6DE, has taken over from Poppy Bradshaw VK6YF, as VK6 State Representative, to give Poppy a break. Poppy will remain our Sponsorship Secretary. Bev really enjoyed her trip to Castlemaine for the ALARAmeet and is already planning the 1996 event. Although it is a long way to travel, Bev hopes that as many ALARA members as possible will try to make the trip with their families.

Special Awards

During the official ALARAmeet proceedings, an award for outstanding service to ALARA was presented to Val Rickaby VK4VR, our Treasurer for 7 years. A special certificate was also awarded to Brian Rickaby VK4RX, for his assistance in setting up the database for the ALARA records. Val and Brian are pictured receiving their special awards from Maria McLeod VK5BMT.



Luncheons

During the year these functions have been most successful. ALARA members in VK3, VK5 and VK6 have been able to both keep in touch with each other and provide an opportunity to entertain overseas and interstate visitors. Jenny Warrington VK5ANW, while on a recent trip and unable to attend the usual luncheon, sent a post card instead. In her usual style, Dorothy Bishop VK2DDB, used it as the inspiration for another of her classic cartoons. Members in VK3 are reminded that the luncheons will not be held in December or January, and VK5 YLs will not meet in December. Seasons Greetings.

ALARA members wish all readers a safe, happy and prosperous Christmas and New Year.

**PO Box 438 Chelsea 3196 VK3ENX @ VK3YZW*

Val Rickaby VK4VR & Brian Rickaby VK4RX receiving special awards from Maria McLeod VK5BMT.

WIA News

WIA Membership

There were 6223 financial members of the WIA as at 30 September 1993. With almost 3500 members residing in New South Wales and Victoria, the memberships of these two Divisions comprise just over 55% of the total WIA membership.

The Federal Office sent out 24 recruitment packages in October on behalf of Divisions, in response to enquiries from people interested in joining the WIA.

ELECTRONIC DISPOSALS

03 723 2699

DB25 Back shells, side entry Bargain price	5 for $3.00
Assorted wafer switches	$2.50 ea
Battery indicators	$1.20 ea
1.8, 10 & 40 MHz Xtals	$1.00 ea
Motor brushes	$1.50 pr
220 μF 385 V caps	$2.50 ea
12 V 10 A STSP relays	$2.00 ea
12 V 40 A STSP relays	$4.50 ea
24 V 10 A STSP relays	$2.00 ea
8049 IC Special price	$2.50 ea

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Victoria 3136

AMSAT Australia

*Bill Magnusson VK3JT**

1993 and all that....

Well here we are at the end of another year. Perhaps a review would be in order.

- The year began with an announcement that major design changes would be required to the phase 3D spacecraft. A change in the structure of the rocket connecting ring that was to house P3D forced a total re-draw of the space frame. All was not bad news though as the new design allowed for a more uncluttered and more efficient "antenna farm" on the top surface.
- KitSat's BBS became operational early in the year and has continued to take the pressure off UO-22. It has since been joined by KitSat-B.
- We saw the launch and subsequent demise of the long awaited ARSENE satellite. This was the most disappointing event of the year. What a shame to think of that dead satellite still orbiting in what was the best of all amateur radio satellite orbits. Southern hemisphere amateurs in particular should mourn the passing of this bird.
- A highlight of the year was a series of articles on "S" mode by James Miller G3RUH. They are recommended reading for all satellite buffs. Written in James' usual catchy and informative style, the articles have been re-printed in just about every amateur radio satellite magazine in the world. They have been responsible for kindling interest in this mode in many radio shacks (including mine). I have an "S" mode system ready for our annual mountain-top expedition around new year.
- Graham VK5AGR produced the 100th issue of the Amsat-VK newsletter in August. Quite a milestone.
- Oscar-13 (and the control stations) were subjected to their greatest challenge yet with a long series of eclipses which are still taking effect as this goes to print. Their success is obvious from the way that OSCAR-13 has managed to weather the storm and still keep performing.
- A new batch of satellites with amateur radio capability have appeared. Kitsat-B, Eyesat-A, IT-Amsat and PO-sat were all launched successfully in September.
- A high-light of the pre-Christmas period last year was when Musa Manarov visited Melbourne. The excitement carried over into this year so it's worth including in our review. He and his party were entertained over a period of 5 days by a number of VK3s and he was interviewed along with Maggie VK3CFI and Bob VK3ZBB by Australian Geographic magazine. His visit included a voice contact with MIR using a 1 watt hand-held transceiver belonging to Peter VK3CPO.
- The MIR crew changed over in July this year with Vasily R3MIR and Alex R4MIR taking over from Alex R2MIR and Genady R9MIR. The new crew have been very active on 2 metre packet and voice.
- Some rather special educational activities have resulted from the crew change. In particular we saw Steve VK3CAX's year 12 physics class in a delightful exchange with Aleksandr, their "Orbiting Professor" on MIR. We saw the girls from Rob Chapman's year 12 physics class at St Columba's college in Essendon send the entire school into raptures with their MIR contact being broadcast over the school PA system.
- In April the MIR crew had the first space to space amateur radio QSO with the crew of the American space shuttle. Various MIR and shuttle crews had attempted to do this before. Another first for amateur radio.
- We saw the old RS-1 satellite spring back to life and although it is only sending meaningless signals it is being tracked again with interest after some years of silence.
- Darrel AA7FV broke the long standing record for the best score in the ZRO tests. He scored perfect copy at level A, 30 dB down from the beacon. Most well equipped OSCAR stations would struggle to hear signals 15 to 20 dB down on the beacon.
- As I write this it is 2.30 am and Ray VK3YPY and I are waiting for the moon to rise. Why, you ask? This is the week-end of the ARRL EME contest and we are hopeful of using my OSCAR antenna system to receive EME signals originating from VE3ONT at Algonquin, Canada. They are using a 150 foot radio astronomy dish for the occasion. They are not in the contest, of course, but are giving amateurs with less than EME stations the opportunity to hear signals from the moon. We sat up until 4.00 am last night and were rewarded by reception of very weak

National co-ordinator
Graham Ratcliff VK5AGR
Packet: VK5AGR@VK5WI
AMSAT Australia net
Control station VK5AGR
Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies: (again depending on propagation conditions)
Primary 7.064 MHz. (Usually during summer).

Secondary 3.685 MHz. (Usually during winter).

Frequencies +/– 5 kHz for QRM.
AMSAT Australia newsletter and soft-ware service
The newsletter is published monthly by Graham VK5AGR. Subscription is $25 for Australia, $30 for New Zealand and $35 for other countries by AIR MAIL. It is payable to AMSAT Aust addressed as follows:

AMSAT Australia
GPO Box 2141
Adelaide SA 5001

WIA News

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of October 1993

L10152	MR G R TOOTELL
L20960	MR M J DARBY
L30868	EAST GIPPSLAND ARC INC
L30869	MR A CRUTCHLEY
L30870	MR T MORRISON
L50319	MR J A DUNN
L70116	MR H G LENNON
VK2ALG	MR T R CLARK
VK2FP	MR B J MCNEIL
VK2LOG	MR G OGDEN
VK2TAU	MR D M BREM
VK3ZUY	MR N J GUY
VK4AAG	MS A GIANOLI
VK4FDR	MR A R RHODES
VK4KGV	MR D U CONN
VK4KNE	MR D A NELIGAN
VK4TCJ	MR C J WILLIAMS
VK4ZNZ	MR W E BOOTH
VK6AGI	MR P AGAPITOS
VK6FF	MR C T SCOBLE
VK6NAM	MR A M KELLY
ZL2AIH	MR A G F HARDING

EME signals on my 20 turn, 435 MHz helix with feed point pre-amplifier. Ray and I were quite excited about hearing the moon reflections for the first time. Tonight is 1296 MHz night and all is ready. We built a 44 turn helix with feed point pre-amp specially for the purpose. Hope all goes well. It's a bit hard to type with one's fingers crossed.

- All in all it's been quite a year. I've been involved in a lot of different fields of activity in amateur radio over the past 43 years, from transmitter hunting to DXpeditioning, home brewing to packet radio, but this amateur radio satellite business wins hands down.

APRS

I'm still collecting bulletins about this system. As far as I can make out it uses packet to plot the position of the received station on a map. It appears to be applicable to digipeating through amateur satellites and can be very useful in conjunction with GPS receivers. I still don't have enough information for a definitive description for this column but if any-one has such info I'd be glad to hear from them. Maybe more next month.

Amateur Radio Satellite Frequency and Mode List

I'll start off the new year with a list of modes and frequencies for all the currently operational amateur radio satellites. This will appear in the January column if I have all the information to hand by the 29th November deadline.

Christmas and New Year Wishes

Have a wonderful relaxing yet productive time over the break. As usual I will be going to Mt Skene in the Victorian alps for our annual satellite expedition. Look out for us on AO-13 mode "S" and most other satellites.

73 for now and for 1994, Bill VK3JT.

**359 Williamstown Rd Yarraville VIC 3013*
Packet: VK3JT @ VK3BBS

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Sign up a new WIA member today — use the form on the reverse side of the AR address flysheet.

Awards

John Kelleher VK3DP — Federal Awards Manager*

May I take this opportunity to wish all YLs, OMs and SWLs the compliments of the approaching festive season, with the hope that the new year of 1994 brings to all, those things which they have earned and justly deserve.

In keeping with the Christmas theme, what could be more appropriate than "the worked Santa Claus Land Award". Here are the details:-

Work Northern Finland stations prefixed OH9, OF9, OG9 & OI9 after 15th January 1986. Special station OH9SCL is located in the Arctic Circle in Finnish Lapland. A total of 10 (ten) points for DX stations is required, the point values being one point for each OH9 etc, etc, except in December, when each is worth 3 points. There are no band or mode restrictions. No station can be worked more than once. GCR list and a fee of US$6.00 or 10 IRCs to OH9AB Award, PO Box 50 96101 Rovaniemi Finland.

New DXCC Country — Reinstatement

This issue brings news of the re-instatement of Eritrea as a DXCC country. In a DXCC desk news release dated September 9th 1993, the ARRL awards committee voted unanimously to accept a recommendation of the DXAC to reinstate Eritrea as a DXCC country. The awards committee voted 4 to 3 to make reinstatement effective from May 24th 1991.

The DXCC desk (ARRL) will accept QSL cards for Eritrea starting January 1st 1994. Any cards received before this date will be returned without action. Those who have credit for deleted Eritrea need not re-submit cards. Eritrea was deleted from the DXCC countries list in 1962 after it was annexed by Ethiopia. Liberation came on May 24th 1991 when forces of the Eritrean Peoples Liberation Front gained control of the country. The really good news is that by selecting May 24th 1991 as the effective date for re-instatement, all operations from Eritrea now count for DXCC credit, including 9ER1TA and 9ER1TB by the Hensons in 1992. This moves the total DXCC countries list to 328 countries.

Consequent to this news, it became my duty to ransack my DXCC active files pre 1962 to find out who had confirmation for Eritrea, by looking up their deleted countries list. I am sure that previous award managers had pre-arranged the chaos which confronted me. After much muttering and sneezing I came up with a short list (from my active files) which I present below. If perchance I have overlooked one or two in the process, I apologise, and ask those I missed to submit their claims. Here is the list:-

VK2s QL SG APK
VK3s JA XB YL
VK4s BG KS LC RF
VK5s MS WO XN
VK6RU
VK7LZ.

Remember, these calls were extracted from active files only.

Special Activity Over the December-January Period

John Martin VK3KWA, Chairman of the Federal Technical Advisory Committee (FTAC), and manager of the Ross Hull contest for 1993-1994 (which runs from December 26th to January 16th) has asked me to publicise that portion of this contest which deals with Maidenhead locators or grid squares. John has gone to a great amount of trouble to inform last years' placegetters in this regard, and to drum up as much enthusiasm as possible. To assist John, and to set the scene, here again are the rules which govern the grid square award.

Grid Square Awards

Rules

1. (a) The Wireless Institute of Australia Grid Square Award (WIA GSA) is awarded for contact with a minimum number of "Maidenhead" 2 degree x 1 degree grid square locators per band as indicated in (b). Grid Squares are designated by a combination of two letters and two numbers.

(b) The minimum number of squares needed to initially qualify for each individual band award are as follows:

All HF bands (including WARC bands)	100
50 MHz	50
144 MHz	30
432 MH	25
1296 MHz	10
13 cm	5
all bands above	5

2. Only contacts made on or after 1 January 1990 are creditable for this award.

3. (a) Individual band awards are endorsable in the following increments:

All HF bands	25
50 MHz	10
144 MHz & all bands above	5

(b) Separate bands are considered as separate awards.

4. (a) No crossband contacts permitted.

(b) No contacts through active repeater or satellite devices or any other relay method permitted.

(c) Contacts with aeronautical or maritime mobile stations do not count.

5. Stations who operate portable or mobile from a different locator than their "home" locator may claim the locator they are operating portable from by either of two methods:

1. work a station located in their "home" locator

2. work at least five different stations outside the portable locator

3. on bands 1.2 GHz and above, work at least one station outside the portable locator.

6. (a) All contacts for all of the individual band awards must be made from a location or locations within the same grid square, or locations in different grid squares no more than 50 kilometres apart. This will be called the "HOME" locator. Excepting contacts made under the provisions of Rule 5

(b) A specified amount of contacts for the basic award needs to be made with stations located in Australia or its territories (ie any prefix VKO to VK9) as per the table below:

All HF bands	25
50 MHz	10
All other bands	1

7. Endorsements will be available on request, ie however you want it endorsed is how it will be done.

8. (a) QSL cards are not required; a certified log extract should be provided with the following information:- Date, time, callsign, mode, frequency, grid locator and signal report sent by the station concerned, and grid you are operating from if portable.

This list should be certified by an official of a society affiliated with the WIA, or by two licensed amateurs, reading as follows: "I/we certify that the enclosed list corresponds with the information contained in the said logbook."

(b) For those who would have difficulty in getting a certified list, photocopies of your logbook signed by the applicant certifying all the information contained within to be true and accurate can be certified by the Awards Manager. Note: All entries must be legible.

9. The cost for each award is Australian $5.00 for amateurs in Australia, or $US5.00 or eight IRCs for those outside Australia. Requests for endorsements should be accompanied by an SASE or one IRC and an SAE.

10. This award is very much dependent upon the honesty of the operator. As such, any fraudulent applications will result in the disqualification of the applicant from all future WIA GSAs.

11. Any decisions regarding interpretation of the rules here printed made by the Federal Awards Manager are final and binding.

12. There will also be a standing list of the top five scorers on each band, so people can see just what is possible and what is being achieved. This may encourage those who think they will never reach their target. It will also give those who like a bit of competition something to aim for.

The weekend of January 15th and 16th 1994 (the VHF-UHF field day weekend) has been set aside as an "activity" weekend for the grid square award. References to the Ross Hull award have already been made in other sections of this magazine.

New Russian Amateur Headquarters

A new centre for Russian amateur activity has been created in Moscow. The Soyuz Radiolyubitelej Rossii (SRR) is, in English, the Union of Radio Amateurs of Russia. It was legally registered on 5th April 1993 by the Ministry of Justice of the Russian Federation as a national amateur radio organisation. The SRR is now seeking IARU endorsement and subsequent membership. The SRR invites all national amateur radio societies to co-operate in correspondence and QSL exchanges. The mailing address is:- SRR PO Box 59 Moscow 105122 Russia.

The address for the inwards/outwards QSL bureau is the same as the mailing address. For general purposes, it is believed that this new organisation replaces the old PO Box 88 Moscow. Requests for further information should be sent to the above address.

Tassie Trout Award

For VK or ZL stations to qualify, work or catch 14 kg of "Trout" (members of the Central Highlands Amateur Radio Club of Tasmania). The president VK7KZ, vice presidents VK7NBF & VK7NAW, treasurer VK7NDO and awards manager VK7JWR are each worth 2 kg. The club station VK7CHT equals 3 kg. Any member portable in the Central Highlands of Tasmania equals 2 kg. All other members, of which there are about 80 spread around Australia, equal 1 kg each.

All other countries (except Australia and New Zealand), need only 4 kg. Contacts can be made on any band and any mode. The club meets on 3585 kHz at 1930 local time on Thursdays.

Cost is $5.00. The Golden Trout award sticker for contacting 25 members, and the Platinum Trout award sticker for contacting 50 members cost $2.00 each.

The award manager is Bill Reid VK7JWR at 40 Wentworth Street Bellerive TAS 7018.

Spirit of Tasmania Award

This is a special event for the new ship, Spirit of Tasmania, which will commence service by the end of the year. It will be a sea link between Tasmania and Victoria and the replacement for the current ship in service, the Abel Tasman.

The Award will be an embossed photograph of the Spirit of Tasmania which will be forwarded to all Amateurs qualifying for the Award. The cost of the Award will be $AUS5.00 or $US5.00 American or 7 IRCs. These charges are to cover costs.

Awards Manager is VK7NBF Bob Jackson, Falmouth House, Falmouth, Tasmania, 7215 Australia.

The call sign for this event will be **VI7STA.**

Qualifications for Award: Licensed Amateurs must make a contact with a Special Event rostered VK7 Amateur station and definitely make the contact with him so he can log it. Shortwave listeners are to state the callsign of both stations making the contact plus the date and time.

There is only one contact you have to make for the award. Three details are needed to qualify. These are: The call sign of the rostered amateur station, date and time in UTC.

Call Frequencies: 3.590, 14.190, 18.140, 21.190, 28.590 — 2 metres and packet + or — QRM. Special Note for CW: 3.530, 14,010 will be CW only + or — QRM. Special note for listening on SSB phone, etc. If propagation is down or there is little activity the rostered amateur station will call on every UTC HOUR and HALF HOUR.

Dates: Starting 27 November 1993 and finishing 23 December 1993.

Due to time limit, no QSL cards will be given out. However, the rostered VK7 amateur station can use his own private QSL card. This is recommended.

**PO Box 300 Caulfield South VIC 3162*

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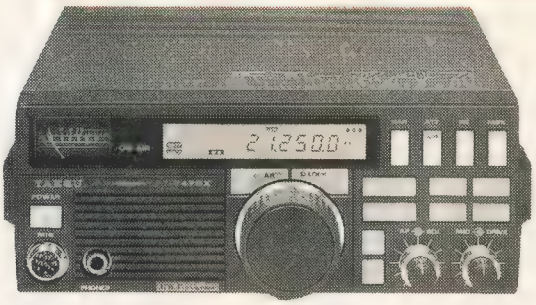
Remember to leave a three second break between overs when using a repeater.

DICK SMITH ELECTRONICS

QUALITY TRANSCEIVERS AT SPECIAL CHRISTMAS PRICES!



2 Year Warranty

FT-747GX Compact H.F Transceiver

The FT-747GX is a compact SSB/CW/AM transceiver providing 100 watts PEP output on all 1.8-30MHz bands, and reception from 100kHz to 30MHz. Includes a front panel mounted speaker and an easy-to-read backlit digital display, dual tuning steps for each mode, dual VFO's for split-frequency operation and 20 memory channels. Complete with wideband 6kHz AM and narrow 500Hz CW IF filters, plus MH-1 hand microphone.

Cat D-2930

$1299*

*Ex-demo units

WITH ANTENNA BONUS! Your choice of 2 'Mobile One' mobile HF antennas from our range of 80m, 40m or 20m whips. ***Worth over $90***

RMK-747 Remote Mounting Kit

Allows the front panel of the FT-747GX to be mounted away from the body of the transceiver. Price includes installation on your FT-747GX.

Cat D-2931

SAVE $50

$299

FT-890 All Mode HF Transceiver

Hurry, price must rise January '94. Buy now and save!

The outstanding FT-890 is a rugged, 100-watt PEP mobile transceiver that covers all HF amateur bands in SSB, CW, FM and AM modes, plus provides continuous reception from 100kHz to 30MHz. Two direct digital synthesisers (DDSs) provide pure local signals and fast t/r changeover, while the low noise receiver front-end offers excellent receiver dynamic range performance. The switchable RF amplifier and a 12dB attenuator provide clear copy of even extremely strong signals, while interference rejection is facilitated by both IF Shift and IF Notch filters.

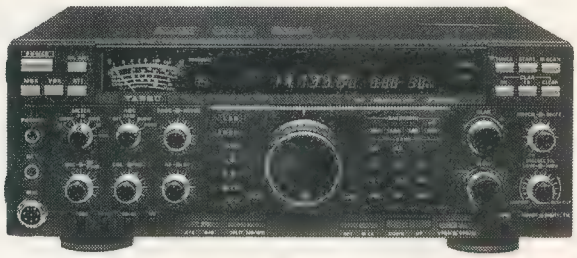
Two independent VFOs per band are provided, plus 32 memories which store data from both VFOs. There's also an effective, variable noise blanker, and a CW iambic memory keyer plus an adjustable passband-shifting speech processor which lets you tailor SSB transmitter audio to your own voice and microphone characteristics. The FT-890 weighs less than 6kg, uses modular design and surface-mount components to ensure highly reliable operation and comes complete with an MH-1 hand mic. An optional internal automatic Antenna Tuner (ATU-2) is also available, which can be controlled from the front panel.

Cat D-3270

2 Year Warranty **$1995**

2 Year Warranty

FT-990 H.F All-Mode Base Transceiver



The FT-990 offers many of the features of the legendary FT-1000 in a more compact and economical base-station package. Its excellent front-panel layout, together with clear labelling, a large back-lit meter and an uncluttered digital display provides very straightforward operation. The receiver uses a wide dynamic range front-end circuit and two DDS's to provide a very low noise level and excellent sensitivity over the 100kHz to 30MHz range. Transmitter output is 100W on all HF Amateur bands (SSB, CW, FM), with high duty cycle transmissions allowed.

The internal auto antenna tuner and inbuilt AC power supply are standard features, while the customizable RF speech processor and Switched Capacitance Audio filtering facilities are unique to the FT-990. Other features include IF Shift and IF Notch filters, IF bandwidth selection, 90 memories and one-touch band selection.

Cat D-3260

$3995

Bonus Deluxe desk microphone (MD-1), valued at $199.

*Offer expires 31st December 1993.

Deluxe Handheld FM Transceivers

The superb FT-415 and FT-815 hand-held FM transceivers are compact and rugged with dual-microprocessor control, a range of new automatic battery-saving (ABS) features and power output which is selectable in up to 4 levels at 12V. A die-cast rear case, polycarbonate front panel and battery case ensure reliability in the most demanding of environments. The display and keypad can both be backlit, and the top panel DC supply jack can be used to power the transceiver and charge a NiCad battery pack. A 36mm speaker provides low distortion audio, while in-built VOX circuitry is included for use with the optional YH-2 headset. Advanced features include two independent VFOs, keypad frequency entry, 41 tunable memories, instant recall CALL channel and various scanning modes. The FT-415 has Automatic Repeater Shift (Australian version), which can be activated whenever you tune to a standard repeater sub-band, plus extended receive coverage. Both have DTMF-based selective calling and paging facilities and come with a high-capacity 7.2V, 1000mA/H NiCad battery, belt-clip, carry case and approved AC charger.

FT-415 Cat D-3610 **$599**

FT-815 Cat D-3615 **$699**

Specifications:

Frequency range:	FT-415 144-148MHz (140-174MHz extended receive) FT-815 430-450MHz
Size:	55 x 146 x 33mm
Transmitter:	
Power output:	FT-415 2.0W (at 7.2V) FT-815 1.5W
Both models:	5.0W at 12V
Receiver:	
Sensitivity:	better than 0.158uV, (12dB SINAD) both models, Ham bands only

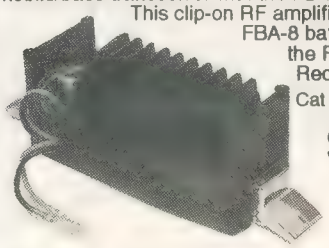
BONUS Purchase any 2m or 70cm handheld during December, and we'll give you a 25% discount on any matching speaker/mic or NiCad battery pack purchased at the same time.

FL-2025 Amp

Turn your FT-290RII into a powerful 25watt mobile/base transceiver with the FL-2025 amplifier. This clip-on RF amplifier replaces the FBA-8 battery holder on the FT-290RII. Requires 13.8V DC.

Cat D-2863

$299



FT-290RII 2M Multi-Mode Transceiver

The multi-mode, transportable transceiver for serious field or mobile operations! The FT-290RII features FM, SSB (USB/LSB), and CW operation with 2.5W output, twin VFOs and 10 memories. Selectable tuning rates are provided for SSB/CW and FM, while mode-specific features such as noise blanker and clarifier control for SSB/CW, plus a full set of functions for FM repeater operation make this unit very simple to operate. Comes with an FBA-8 battery holder for nine "C" size standard or NiCad batteries (not supplied), antenna and hand-held microphone.

Cat D-2875

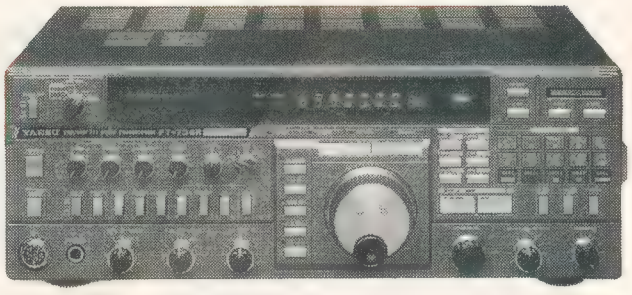
2 Year Warranty

$999

FT-736R VHF/UHF Base-Station Transceiver

The FT-736R is Yaesu's best VHF/UHF transceiver! Designed for the serious VHF/UHF operator, this high-performance transceiver provides 25W output (SSB, CW, FM) on the 2 metre and 70cm (430-450MHz) bands and can easily be expanded to cover the 6 metre and 23cm (1240-1300MHz) bands as required. Features include keyboard frequency entry, 115 memories, 2 independent VFOs per band, separate FM Channel knob with selectable channels steps, 2 full duplex VFOs for Satellite operation, IF shift and Notch filters, noise blanker, all-mode VOX, SSB speech processor, GaAs Fet front-ends(430, 1200MHz) high-stability TCXO reference oscillator & an inbuilt AC power supply. Microphone optional extra.

Cat D-2920



2 Year warranty

HURRY! BEAT THE PRICE RISE! **$2995**

FT-911 23cm Handheld

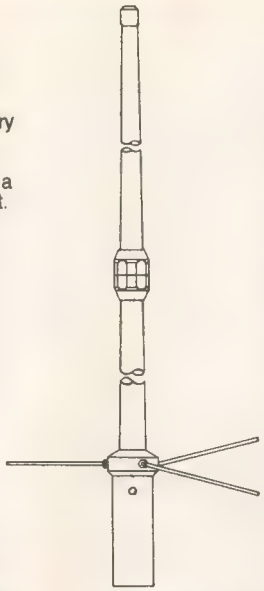
The compact FT-911 23cm hand-held provides great performance, long battery life, and rugged construction, at an incredibly low Dick Smith Electronics price. If you've been thinking of getting a 23cm hand-held, now's the time to do it. The FT-911 provides 1240-1300MHz coverage, 2 VFO's, keypad frequency entry, 7-digit LCD screen, 1000 mA/H NiCad pack, carry case, belt-clip and approved AC charger.
Cat D-3380

Only

$599

Save $200

2 Year Warranty



BRAINER

Hurry, these Brainer Antenna specials expire 31st December '93. Buy now and save!

Quality Japanese antennas at a bargain price. Don't miss out on these great specials, exclusive to Dick Smith Electronics!

A Price Breakthrough!

Don't miss our best ever prices on these high performance Brainer dualband 2m/70cm base station antennas. They use robust FRP (fibreglass reinforced polyester) tubing construction for excellent all-weather operation, and a ground-plane for a clean low-angle radiation pattern which maximises gain. Each antenna is rated at 200W, uses stainless steel hardware for long-life, and comes with detailed locally written instructions to make construction easy.

Compact GST-1 2m/70cm Antenna

Frequency	144-148MHz, 430-450MHz
Gain	6dB on 2m, 8dB on 70cm
Length	2.5m
Type	2 x 5/8 wave (2m) 4 x 5/8 wave (70cm)

Cat D-4830

SAVE $20

$179

Long Range GST-3 2m/70cm Antenna

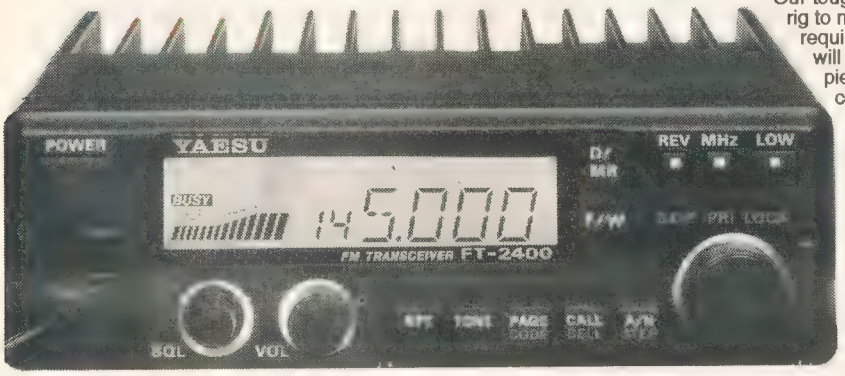
Frequency	144-148MHz, 430-440MHz
Gain	7.9dB on 2m, 11.7dB on 70cm
Length	4.4m
Type	3 x 5/8 wave (2m) 7 x 5/8 wave (70 cm)

Cat D-4835

SAVE $10

$269

FT-2400H Rugged 2m 50W Mobile



Our toughest 2m mobile! The FT-2400H is the first 2m amateur rig to meet the USA MIL-STD 810C shock and vibration requirements, so you know you're getting a transceiver that will provide really reliable long-term operation. It's one-piece diecast chassis allows 50W output without forced air cooling, while the large back-lit LCD screen and major controls are well spaced for easy access. A customised microprocessor also provides Auto Repeater Shift (Australian band plan), plus extended 140-174MHz receiver coverage with a track-tuned front-end and dual FET mixer for improved receiver performance. CTCSS encode, 31 tunable memories, scanning modes, and an MH-26 hand microphone are also provided.

Cat D-3630

$699

2 Year Warranty

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Sydney and Enquiries - (02) 888 2105
Fax: (02) 805 1986 or write to
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STORES ACROSS AUSTRALIA AND NEW ZEALAND *STORES IN RED ARE OPEN SUNDAYS.

Contests

*P Nesbit VK3APN — Federal Contest Coordinator**

Contest Calendar Dec 93 — Feb 94		
Dec 3/5	ARRL 160 m Contest	(Nov 93)
Dec 11/12	ARRL 10 m Contest	(Nov 93)
Dec 26/		
Jan 16	WIA Ross Hull Memorial Contest	
Jan 1	ARRL Straight Key Night	
Jan 1/2	ARRL RTTY Roundup	
Jan 15/16	VHF/UHF Field Day	
Jan 16	HA DX CW Contest	
Jan 28/30	CQ WW 160 m DX Contest	
Jan 29/30	UBA (Belgium) SSB DX Contest	
Feb 12/13	PACC CW/SSB DX Contest	
Feb 12/13	Spanish RTTY Contest	
Feb 19/20	ARRL DX CW Contest	
Feb 25/27	CQ 160 Metre SSB Contest	
Feb 26/27	RSGB 7 MHz CW Contest	
Feb 26/27	UBA (Belgium) CW DX Contest	

Introductory comments are held over this month, due to lack of space. Many thanks to the following for help, information, and inspiration: VK3KWA, VK6NE, CQ, QST, and Radio Communications. Please keep the letters coming, including any spare copies of results. I would like to wish everyone a very Happy Christmas, and see you all in the new year. Until then, good contesting!

73,
Peter VK3APN

Contest Details

The following contest details should be read in conjunction with the "General Rules & Definitions" published in the April issue of *Amateur Radio.*

ARRL Straight Key Night

This is a yearly activity period for stations using a straight key, and runs from 0000 to 2359z on New Year's Day, Saturday, 1 January. Suggested frequencies on 80, 40 and 20 metres are 60-80 kHz up from the band edge.

Use "SKN" instead of RST in the exchange, to indicate to other stations you are using a straight key. This is not a contest, serial numbers are not exchanged, and ragchewing is encouraged. Send a list of stations worked plus your vote for best fist heard, most interesting contact etc, by January 8th to: "ARRL SKN", 225 Main Street, Newington, CT, USA 06111.

ARRL RTTY Roundup

1800z Saturday to 2400z Sunday, Jan 1-2.

The object is to contact as many local and overseas stations as possible on Baudot, RTTY, ASCII, AMTOR, and/or packet. More than one digital mode may be used, but QSOs and multipliers are counted once only regardless of mode. The bands allowed are 3.5-30 MHz, on frequencies recommended for digital operation (no 10, 18 or 24 MHz). Categories are: single operator all band (1) max 150 W O/P, (2) more than 150 W O/P; multi-operator single transmitter all band.

Exchange signal report and QSO number. W/VE stations will send signal report and state/province. A maximum of 24 hours operating time is permitted out of the 30 hour contest period. Two rest periods must be taken in two separate blocks, and the on and off times clearly marked in the log. Each rest period must be at least 15 minutes. Listening time counts as operating time.

Score 1 point per QSO. A station may be worked once per band for points credit. The multiplier is the total of the US states, Canadian provinces, and DXCC countries worked. KH6 and KL7 are countries; VO1 & VO2 count as one VE province. Multipliers are counted only once, not once per band. The final score is the total points times the multiplier. Check sheets are required for logs with 200+ QSOs. Mail your log and summary sheet by 2 February to: "ARRL RTTY Roundup", 225 Main Street, Newington, CT, USA 06111.

HA DX CW Contest

0000-2400z Sunday 16 January

This contest takes place on the Sunday of the 3rd full weekend of January each year. Categories are: single operator single or multiband, multioperator single or multitransmitter, and SWL. Bands are 160-10 m. Exchange RST + serial number; HA/HG stations will add a 2 letter county code, or if members of HADXC, their club number. Codes for each call area are (1) GY VA ZA, (2) KO VE, (3) SO TO BA, (4) FE, (5) BP, (6) NG HE, (7) PE SZ, (8) BN BE CS, (9) BO, (0) HA SA.

Score 6 points per HA/HG QSO. Multipliers are the total HA counties and club numbers worked per band. Final score equals total points x total multiplier. Separate logs for each band are requested. Send logs with summary sheet and declaration within 6 weeks to "HADXC, PO Box 79, Paks. H-7031, Hungary". Comprehensive awards are offered, and the top foreign single operator multiband entrant will be awarded honorary membership of HADXC.

CQ Worldwide 160 Metre Contest

2200z Friday to 1600z Sunday.

CW: 28-30 Jan; Phone: 25-27 Feb

The CW and Phone sections of this contest are scheduled for the last full weekend of Jan and Feb each year. The object is to contact as many stations worldwide on 160 m as possible, and VK to VK contacts are permitted for contest credit. Categories are single and multioperator. The use of packet, a spotting net, or logging assistant makes you multi-op. Suggested DX calling frequencies are 1830-1835; for W/VE QSOs specify a listening frequency outside this window. Look for Japan on 1907-1912.

Exchange RS(T) plus prefix or country abbreviation (W/VE will send RST plus state/province). Score 2 points for contacts with stations in own country, 5 points with stations in other countries in the same continent (continental boundary as for WAC), and 10 points with stations in other WAC continents. Points for contacts with /MM stations depend on their location.

Multipliers are US states (max 48, KH6 & KL7 not included); Canadian provinces (max 13, including VO1, VO2, NB, NS, PEI, VE2, VE3, VE4, VE5, VE6, VE7, NWT, Yukon); DXCC/WAE countries, including KH6 and KL7; maritime mobiles. The final score equals the total QSO points times total multiplier (US states + VE provinces + DX countries + maritime mobiles).

Check sheets are required for logs containing 200+ QSOs (no small feat in VK!). Computer disk logs are especially welcome. Indicate CW or SSB on the envelope, and mail the log and paper summary sheet to: "CQ 160 Metre Contest, 76 North Broadway, Hicksville, NY 11801". Mailing deadlines are 28 Feb for CW, and 31 March for SSB.

Ross Hull Memorial VHF-UHF Contest 1993-1994

The WIA maintains a perpetual trophy in honour of the late Ross Hull and his pioneering achievements in the VHF-UHF field, especially the discovery and investigation of VHF tropospheric propagation. The name of each year's contest winner is engraved on the trophy, and he/she will receive an attractive wall plaque and certificate. Other certificates may be awarded to top scorers in the various divisions of the contest. The contest is not confined to WIA members.

Duration:

Although this contest normally begins on the first Saturday after Christmas Day, this year Christmas Day is on Saturday, so it will begin on Boxing Day. The

duration is therefore 1800 UTC Sunday, 26 December 1993, to 1800 UTC Sunday, 16 January 1994.

The 1800 UTC start for contest days has been retained, so each contest day will start early in the morning local time, eg 5 am Eastern Summer Time. Logs must show time in UTC, but local dates may be used. Note that the last weekend of the contest coincides with the VHF/UHF Field Day, and contacts made in one contest may be claimed for either or both, as applicable.

Sections:

Single operator only, (A) multiband, (B) single band. All entrants will be scored for both sections (A) and (B).

General:

All bands above 30 MHz may be used. On 6 m, a lower limit of 50.125 MHz is suggested for contest activity, and 52-54 MHz for local contacts. NOTE: NO contest operation should take place near 50.110 MHz, and offenders will be disqualified.

Contest exchanges should not be made on recognised DX calling frequencies, unless conditions make it impossible to move elsewhere, as the idea of the contest is to work DX which no-one can do if the calling frequency is full of S9 local signals! A frequency of .150 on each band is suggested for contest calls.

Stations may be worked once per band per contest day. Crossband, repeater or satellite contacts are not permitted. You may operate from any location.

Contest Exchange:

RS(T) plus a 3-digit serial number, which may be cumulative or revert to 001 at the start of each contest day. Maidenhead locators may also be exchanged to assist distance calculations.

Scoring:

Scoring is determined from the 7 best contest days (1800-1800 UTC) for each band, as nominated by the entrant. The days may be different for each band.

For contacts on these days only, claim 1 point per 100 km or part thereof (ie up to 99 km, 1 point; 100-199 km, 2 points, etc). On 6 m, a maximum of 10 points per contact applies. Multiply the total points on each band by the multiplier for that band, which is: 6 m (1), 2 m (4), 70 cm (7), 23 cm (10), 13 cm (13), Higher (16).

Logs:

Logs should cover the full contest period. Distance estimates need only be made for the 7 nominated days for each band. Separate logs for each band are not necessary but, if possible, common logs should have a separate score column for each band.

For each contact, show:
— date and UTC time;
— your location (if portable/mobile);
— band, mode, and callsign of station worked;
— location or Maidenhead locator of station worked (if not QTHR);
— RS(T) and serial numbers sent and received;
— estimated distance and points claimed.

Logs must include a cover sheet showing: operator's callsign, name and address, station location (if different from the postal address), a scoring table set out as per the example below, and a signed declaration that the station has been operated in accordance with the rules and spirit of the contest.

Deadline:

Post logs to: "John Martin VK3KWA, WIA Ross Hull Contest Manager, PO Box 300, Caulfield South, Vic 3162" to be received by Monday, 7 February 1994. Early logs would be appreciated.

Disqualification:

Normal rules apply. Entrants may be disqualified if there is evidence that claimed contacts were not made, or if logs are incomplete or illegible. Persistent use of DX calling frequencies for contest exchanges may lead to disqualification.

Awards:

The overall winner will be the top scorer in Section (A). Awards will also be made to the top scorers on each of the following bands: 6 m; 2 m; 70 cm; 23 cm; 13 cm; microwave (bands above 3 GHz).

Example Scoring Table:

6 metres		2 metres		70 cm		
Date	Score	Date	Score	Date	Score	
Dec 29	xxx	Dec 27	xxx	Dec 29	xxx	
Jan 7	xxx	Dec 31	xxx	Jan 6	xxx	
Jan 10	xxx	Jan 6	xxx	Jan 9	xxx	
etc up to 7th nominated day for each band						
Points	xxx		xxx		xxx	
Mult	x 1		x 4		x 7	
Total	xxx	+	xxx	+	xxx	=xxxx
						(GRAND TOTAL)

Note on Calculating Distances:

Absolute accuracy is not needed, providing you know whether the distance is above or below the nearest multiple of 100 km. An easy method is to draw 100 km circles around your location on a map with a compass. Better estimates can be made from 6-digit Maidenhead locators, using the simple computer programs published in the Dec 90 and Jan 91 editions of *Amateur Radio.* An accurate and fully error-trapped program on IBM format floppy disc is available from: John Martin VK3KWA (QTHR), upon receipt of a disc (any size) in a mailing box plus return postage. This program also includes calculation of bearings and conversion between lat/long and Maidenhead locators.

Note that the contest manager reserves the right to adjust claimed distances on the basis of computer calculation, and his decision is final.

As usual, good luck and good DX to all — and please send in that log!

1994 VHF-UHF Field Day

The Field Day will again be run over the last weekend of the Ross Hull Contest — 15/16 January 1994. The time differential between VK6 and the eastern states has been retained.

Field Day contacts can be counted for the Ross Hull Contest, and vice versa. Separate exchanges for the two are NOT required. The only difference in the exchange is that the Field Day exchange must include your Maidenhead locator. The other thing to remember is that you can make repeat contacts for the Field Day but not for the Ross Hull Contest.

The duration of the Field Day has been extended, although scoring will still be based on a 24-hour or 6-hour operating period. This allows entrants to choose the operating periods that suit them best, and will also make it easier for those who can only operate on the Sunday. The repeat

A. J&J COMAN ANTENNAS

Dual band co/linear 2M&70cm	$ 95
2M co/linear	$ 89
5 ele 2M	$ 73
12 ele 2M	$115
6 M J-pole	$109
6 ele 6M	$188
Duo 10-15M	$259
3 ele 15M	$179
3 ele 20M	$289
M B Vert NO TRAPS 10-80 M	$249
Tri band beam NO TRAPS	$665
30M linear loaded 2 ele	$360
40M linear loaded 2 ele	$449
13-30M logperiodic 12 ele	$865

Plus freight & packing

new lower freight rate applies

We are now the owners of exclusive range of W&G Wulf antennas and aim to provide the same quality, service and antennas that you have come to expect, so please call us and discuss your antenna needs.

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Call ANDY COMAN VK3WH

Lot 16, Websters Road, Clarkfield, 3429

(054) 285 134

contact time has been reduced from four hours to three.

The only other change has been to drop the requirement for all operation to be from the one locator square. Entrants can now, if they wish, activate different squares on the two days of the Field Day, and help others to collect new squares for the WIA Grid Square Award.

Duration:

VK6 only: 0200 UTC Saturday, 15 January to 0600 UTC Sunday, 16 January. All other call areas: 0000 UTC Saturday to 0400 UTC Sunday (in Eastern Summer Time this is 11 am Saturday to 3 pm Sunday).

Sections:

A: Portable station, single operator, any 24 consecutive hours.

B: Portable station, single operator, any 6 consecutive hours.

C: Portable station, multiple operator, any 24 consecutive hours. D: Home station, any 24 consecutive hours.

Single operator stations may enter both Section A and Section B.

General Rules:

All modes and bands above 30 MHz may be used. Contest exchanges should not be made on recognised DX calling frequencies. Repeater, satellite and crossband contacts are not allowed. Operation may be from any location. You may work stations within your own locator square.

Contest Exchange:

RS(T) plus a 3-digit serial number (serial numbers need not be consecutive), plus your Maidenhead locator.

Repeat Contacts:

Stations may be worked again on each band after three hours.

Scoring:

Home stations 1 point per contact, portable stations 2 points per contact. Band multipliers: 6 m (1), 2 m (4), 70 cm (7), 23 cm (10), 13 cm (13), Higher (16).

For each band, multiply the total points (either 1 or 2 points per contact) by the number of locator squares worked on that band, then by the appropriate band multiplier. For example, on 2 metres, 20 points x 4 squares x 4 = 320 points. See the sample scoring table below.

Logs:

For each contact: UTC time, band, station worked, serial numbers and locator numbers exchanged, points claimed. The front sheet should contain name, address, callsign, section entered, the period of operation to be scored (either 24 or 6 consecutive hours, starting on the hour), and a scoring table as shown below. If you enter both the 24 and 6 hour sections, a separate scoring table should be supplied for each.

The scoring table should be as follows:

Band	Points		Squares		Multiplier		Total
6 m	xxxx	x	xxxx	x	1	=	xxxx
2 m	xxxx	x	xxxx	x	4	=	xxxx
70 cm	xxxx	x	xxxx	x	7	=	xxxx
etc.					Overall Total:		xxxx

Entries:

Post logs to: "John Martin VK3KWA, VHF-UHF Field Day Contest Manager, PO Box 300, Caulfield South, Vic 3162". Logs must be received by Monday, 7 February 1994. Early logs would be appreciated.

Awards:

The overall winner will be the highest all-band scorer in Section A. Awards will also be made to the highest scorer on each band in Section A, and the highest scorers in Sections B, C and D.

Results (Oceania) of RSGB 1993 7 MHz DX Contest

Call/QSO Pts/Mult/Score (* = award winner)

VK3APN* 420 12 5400
VK8AV 260 8 2080

Results of 1993 WIA RD Contest

Congratulations to VK3 Division, who have won the RD Trophy yet again, and the runner-up VK6 Division. No doubt there will be mutterings about the need for a rule change to even out the results, but be assured the formula rewards the divisions which participate well!

Perhaps driven by the poor HF conditions, 2 divisions turned to VHF and scored well. Perhaps amateurs in the other divisions might consider including VHF in their activity for next year's contest. Remember, it's only 8 months away!

This year's results were again compiled by the Northern Corridor Radio Group, whose assistance allows a timely result to appear in *Amateur Radio*.

73, Neil VK6NE

Divisional Ladder:

$$\text{Final Score} = \frac{\text{No. Logs}}{\text{No. Licences}} \times \text{Total points} \times \text{WF}$$

1st: VK3 (180/4863 x 16491 x 3.631 = 2216.47)
2nd: VK6 (119/1681 x 12026 x 1.353 = 1151.43)
3rd: VK2 (42/5325 x 4613 x 11.507 = 418.68)
4th: VK5 (55/1999 x 5806 x 2.565 = 409.72)
5th: VK1 (37/421 x 2602 x 1.718 = 392.92)
6th: VK4 (34/3284 x 3433 x 9.546 = 339.28)
7th: VK7 (17/627 x 2478 x 4.723 = 317.31)

Individual Results

* denotes a certificate winner
\# denotes a certificate winner (Novice class)

HF Phone:

VK1HK	207	VK3PK	67	VK4AAK	50
VK1RN	101	VK3EXV	66	VK4WRM	50
VK1LEC	82	VK3MFX	65	VK4AVR	42
VK1DA	66	VK3EUZ	62	VK4PJ	35
VK1KLB	63	VK3AFW	60	VK4CD	25
VK1BRD	45	VK3EZM	58	VK4ACC	23
VK1DW	35	VK3AHD	51	VK4ADY	16
VK1ZX	16	VK3ATL/P	45	VK5AYD	512
VK1OK	12	VK3DXH	45	VK5ARC	426
VK1MTB	11	VK3WOD	44	VK5ATU	387
VK2ARJ	598	VK3DY	42	VK5EE	251
VK2BO	502	VK3VEX	41	VK5GN	250
VK2CAA/P	413	VK3SM	40	VK5BWH	217
VK2CJH	317	VK3MGZ	40	VK5NYD	176 #
VK2CCK	292	VK3BMV	40	VK5FD	155
VK2PS	289	VK3XK	39	VK5XY	150
VK2VM	259	VK3LBA	38	VK5DK	100
VK2SS	137	VK3JDO	35	VK5UW	100
VK2XT	122	VK3NAH	33	VK5EW	84
VK2CJT	120	VK3CHN	33	VK5PAY	81
VK2ALZ	105	VK3DYF	33	VK5WO	74
VK2IKV	104	VK3PQ	32	VK5LL	72
VK2DQE	95	VK3LP	30	VK5BVJ	70
VK2ANK	88	VK3QI	30	VK5GMH	58
VK2RX	79	VK3WEQ	30	VK5YX	54
VK2IV	73	VK3EWD	27	VK5ZQ	51
VK2RJ	58	VK3JJF	26	VK5RV	50
VK2LEE	52	VK3AGH	25	VK5NF	45
VK2SP	43	VK3AXJ	25	VK5APC	43
VK2WG/P	35	VK3DKT	25	VK5RK	42
VK2AXT	31	VK3NA	24	VK5UQ	35
VK2DJW	27	VK3PA	23	VK5TW	35
VK2EMU	27	VK3DD	21	VK5PC	34
VK2MV	27	VK3BFN	21	VK5AGB	30
VK2KGX	22	VK3UJ	20	VK5CJ	25
VK2CF	20	VK3JI	20	VK5BGL	24
VK2ALV	13	VK3KAV	20	VK5KJT	22
VK2WT	11	VK3AYQ	20	VK5XT	21
VK3YH	417	VK3EAT	19	VK5KRT	17
VK3BML	284	VK3VTR	17	VK5SE	16
VK3DDX	271	VK3DYL	17	VI6CKB	632*
VK3APC	211	VK3IP	17	VK6UF	473
VK3AHY	194	VK3ALD	15	VK6ED	450
VK3CX	164	VK3VCF	15	VK6ANC	319
VK3EJS	156	VK3ACR	11	VK6WJH	309
VK3GH	154	VK3KKJ	4	VK6RG	225
VK3GHA	138	VK4DDJ	343	VK6GW	222
VK3HG	124	VK4BAY	333	VK6KG	168
VK3ABP	122	VK4LT	217	VK6IM	166
VK3ALK	118	VK4DRC	205	VK6JP	154
VK3MBR	111	VK4IS	203	VK6PAK	150
VK3ADW	102	VK4BBA	201	VK6SMH	121
VK3JK	101	VK4AMD	191	VK6KH	114
VK3DVT	101	VK4GD	110	VK6HU	105
VK3CKH	100	VK4ACW	105	VK6SAN	105
VK3CSD	98	VK4KEL	102	VK6OE	103
VK3CAY	96	VK4QF	101	VK6VZ	100
VK3BJN	95	VK4AQD	82	VK6SAR	82
VK3OM	94	VK4OD	80	VK6RR	79
VK3XF	92	VK4KJD	76	VK6SCS	75
VK3DNC	84	VK4YG	75	VK6SH	74
VK3LK	79	VK4CEM	71	VK6ABC	67
VK3BRZ	79	VK4WIT/P	61	VK6SAA	57
VK3MTA	75	VK4BSH	60	VK6DA	56
VK3RC	74	VK4PVH/P	56	VK6GGA	46
VK3GI	72	VK4ACS	50	VK6PDR	44
		VK4PT	50	VK6YY	42

VK6QN	41	VK3DXH	11	VK3ER	163	VK5ZLJ	341	VK6RO	100	VK7GL	26
VK6FRE	40	VK3WEG	9	VK3WWW	158	VK5XY	153	VK6IM	90		
VK6RU	38	VK4XA*	134	VK3JK	155	VK5ZBK	140	VK6AN	87	**VHFCW:**	
VK6AN	38	VK4XW	116	VK3AXJ	151	VK5KRT	104	VK6HU	87	VK1DO	13*
VK6KAD	37	VK4LV	100	VK3XEM	149	VK5EW	98	VK6SAN	86	VK1DA	10
VK6GGD	37	VK4OD	45	VK3BMV	140	VK5PC	93	VK6RR	74		
VK6CR	33	VK4ICU	18	VK3GH	139	VK5THA	83	VK6ZSB	63	**VHF Digital:**	
VK6WU	31	VK4XJ	12	VK3AUI	135	VK5SE	78	VK6KIP	63	VK1ZX	6
VK6YJ	28	VK5AGX	97	VK3IP	133	VK5ZKK	71	VK6JJ	55	VK3KKS	13
VK6TS	25	VK5BGL	46	VK3EWM	133	VK5ZDS	70	VK6OE	53	VK3ACR	11
VK6UW	23	VK5TL	25	VK3MTA	127	VK5ZTJ	66	VK6KG	52	VK3CAY	1
VK6WT	20	VK5XE	19	VK3ZNF	122	VK5GN	57	VK6CR	50	VK6KS	50*
VK6APK	20	VK5AAC	19	VK3MCL	115	VK5UQ	24	VK6FC	49	VK6XPS	42 #
VK6APW	18	VK6AFW	94	VK3TJA	115	VK5IE	24	VK6THB	42	VK6CR	17
VK6AO	17	VK6AJ	44	VK3KT	113	VK5PAY	21	VK6WCC	42	VK6RR	12
VK6FC	16	VK6WT	32	VK3ZWI	113	VK5YX	14	VK6APW	41	VK6THB	10
VK6QB	13	VK6VZ	22	VK3ZNE	111	VK6YS	563	VK6FJA	40	VK6HK	2
VK6HK	11	VK6RZ	15	VK3DUQ	109	VK6KS	500	VK6BY	38		
VK6YF	11	VK6RU	14	VK3XV	102	VK6WIA	289	VK6GSB	37	**Overseas Phone HF:**	
VK7PC	486	VK6GA	13	VK3MGZ	99	VK6TTY	287	VK6YF	35	P29VH	217*
VK7KZ	450	VK7RY	50	VK3GMZ	97	VK6RRG	273	VK6KW	33	P29NJS	56
VK7CK	385	VK7KA	35	VK3QI	97	VK6ZLZ	265	VK6DUN	32	ZL1BVK	389*
VK7KC	277	VK8HA	70	VK3USC	94	VK6ISY	259	VK6WT	30	ZL1BGT	222
VK7SHV	276	VK8AV	65	VK3XEC	82	VK6SH	240	VK6SM	26	ZL3TX	184
VK7MGS	152	**VHF Phone:**		VK3ARP	78	VK6LZ	237	VK6WU	26	ZL2ADN	170
VK7AL	88	VK1DO	272	VK3BML	73	VK6BWI	221	VK6MCB	23	ZL2GJ	161
VK7JP	68	VK1TRT	204	VK3CAY	71	VK6RG	218	VK6APK	21	ZL2AJB	122
VK7VK	56	VK1AWH	142	VK3CRA	68	VK6SAA	218	VK6UV	20		
VK7YW	56	VK1RG	133	VK3TQC	62	VK6XPS	212	VK6EB	18	**Overseas CW HF:**	
VK7NBF	20	VK1ZQR	133	VK3BFN	61	VK6GGA	199	VK6BDO	17	ZL4GU	84*
VK7NGC	20	VK1KLB	126	VK3CHN	60	VK6GGD	190	VK6AO	14	ZL2AJB	55
VK7BM	20	VK1KMA	120	VK3JJF	55	VK6SP	177	VK6HK	13		
VK7ASN	13	VK1DA	115	VK3PQ	55	VK6TKR	176	VK6RU	12	**Receiving:**	
VK8AN	270	VK1ED	92	VK3UFC	55	VK6DX	147	VK6FRE	12	VK6-	
HF CW:		VK1ZX	88	VK3ARK	50	VK6BDS	129	VK6RZ	10	P. Kenyon	242*
VK1FF	82	VK1DW	85	VK3CSD	45	VK6SAR	107	VK6SM	8	VK3-	
VK1DRL	58	VK1LEC	69	VK3WI	43	VK6ANC	105	VK6ATR	6	M. Berglund	215
VK1CC	14	VK1WI	41	VK3HZ	41	VK6PDR	104	VK6SCS	3	L30763	65
VK1DA	14	VK2EDA/1	34	VK3JI	40						**ar**
VK2ZC	105	VK1YYZ	27	VK3DYL	39						
VK2AJE	102	VK1ACA	23	VK3DKT	32						
VK2DID	79	VK1BRD	22	VK3AMD	30						
VK2GS	76	VK1MTB	20	VK3AQ	30						
VK2II	71	VK1CUB	11	VK3XDQ	30						
VK2CW	52	VK1OK	10	VK3ZUG	30						
VK2QF	50	VK2ANK	62	VK3ZUQ	30						
VK2AZR	40	VK3ACR	864*	VK3AGH	28						
VK2AIC	38	VK3APC	491	VK3AFW	28						
VK2RJ	31	VK3AYF	436	VK3ZBI	28						
VK2DJW	30	VK3CKH	412	VK3AL	27						
VK2HQ	25	VK3BY	404	VK3BRZ	25						
VK2BO	23	VK3JDO	316	VK3ZXY	24						
VK3DVW	92	VK3ACT	288	VK3KKJ	22						
VK3FC	83	VK3DXH	273	VK3BJN	21						
VK3CIM	68	VK3WOD	272	VK3DTR	21						
VK3AMD	53	VK3CL	270	VK3VKC	21						
VK3XB	50	VK3JUD	261	VK3CX	20						
VK3ALZ	44	VK3ZJF	261	VK3DD	19						
VK3ANJ	40	VK3ALM	241	VK3BBU/P	19						
VK3APN	31	VK3JTA	234	VK3GI	17						
VK3NAH	30 #	VK3NJE	200	VK3YPY	16						
VK3XF	30	VK3GHA	184	VK3LBA	13						
VK3BBN	27	VK3WEG	177	VK3PC	13						
VK3DDX	26	VK3JTW	177	VK3MFX	10						
VK3DNC	20	VK3ANM	175	VK3ZB	10						
VK3KS	18	VK3VKP	173	VK3EAT	2						
VK3JI	16	VK3MFR	171	VK5TTY	494 #						

Stolen Equipment

The following equipment has been reported stolen. If you have any information that may lead to the recovery of the equipment, please get in touch with the advised contact as soon as practicable.

Make: Alinco

Model: DJ-100T

Serial Number: 0005049

Type: Handheld transceiver

Accessories: Rubber duck antennna; battery pack

Modifications: Callsign VK2KIQ painted on body

Stolen from: JOTA base at 3rd Mortdale Scout Hall

Date: 17 October 1993

Owner: Doug Rosser

Callsign: VK2KIQ

Contact details: 02 411 9611 BH **ar**

Ham Log is the gold standard log program — world-wide

Neil Duncan in ARA said: "Professionally-presented product... This is the way to do it properly... I have no hesitation in recommending the package...". **And that was Version 1!!!.**

On version two, **Len Shaw** wrote: "The author has gone considerably further (on features) than in any log program... ...you are unlikely to find a better log-keeping program anywhere. Having seen and used a wide variety of shareware and commercial programs, I believe this one to be excellent value for money... I would say the same if it was double the cost." Born in 1990, we now have version 2.4!

Some user comments: "Golly I am impressed... Over the Moon" "I have a number of logs and *Ham Log* is on the hard disk to stay!" "It is without doubt the best Log I have ever used — you have covered everything — a breeze to use" "A super program and Australian" "Thanks for the excellent back-up service" An FK8 wrote to the magazine ***Megahertz:*** "My job — programmer of 14 years... I've acquired 10 log programs without ever making use of them until I purchased *Ham Log.* It has maximum ease of use whilst keeping a rare functional richness... perfect statistics, listings and rare tools — torture it: one use will make you appreciate its flexibility." VK6PY, VK4VHP, VK5QB, FK8GV.

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Dr Hi Fi P/L 74 Carrington Rd.
WAVERLEY 2024 PH: (02) 369 2008
FAX: (02) 369 3069

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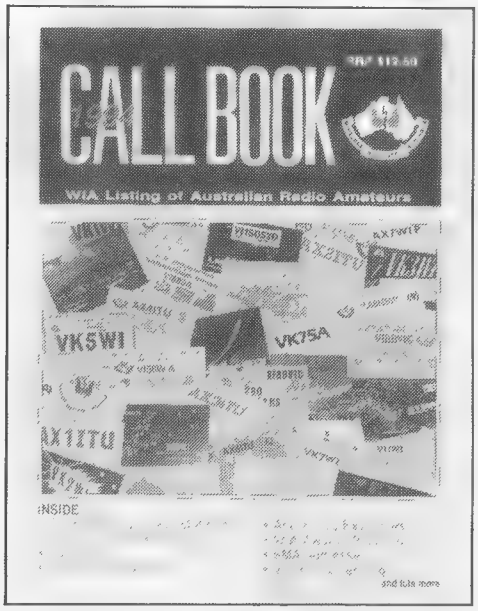

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Divisional Notes

Forward Bias — News from the VK1 Division

Christopher VK1DO

Canberra has been turning on its usual charming, warm weather over the last month. This pleasant weather, combined with daylight saving, is an ideal time to see antenna projects completed and vital refurbishing of those outdoor components that wear and tear.

Many of our local amateurs assisted with communications during the recent Esanda car rally. This spectacle dominated the dirt roads around our local forests for three days during November. The meticulous organisation and levels of expertise exhibited in this exercise are a credit to the amateurs involved. Thanks are extended, not only to those directly involved, but also to the locals who allowed the exclusive use of our repeaters throughout the weekend.

Hot on the heels of the Esanda rally, in fact the next day, saw an enthusiastic group of locals meeting for the final event in the ACT Division's 1993 calendar, namely an end of year BBQ. While on the topic of our calendar and various schedules, please note, if you are an avid listener to our weekly broadcasts, that the broadcast will go into a Christmas recess with the last broadcast in December going to air on Monday 13 December. We return on Monday 17 January just one week before our January meeting.

I am pleased to say that we are still looking strong for our part in the 1994 John Moyle Field Day. Three groups are well advanced for operation during the weekend. The organisers for these three groups are John VK2EJC, Phillip VK1PJ and Christopher VK1DO. John's group plans to operate from a site just near Captains Flat. Phil will take his troops somewhere further south and the third group hopes to operate from Mt Franklin with an emphasis on VHF and some lickity split CW operators burning up the ether on HF. Please don't wait to be invited; speak up and get in on the remaining planning meetings before things are finalised.

The general meetings of 1993 have been well supplied with scintillating technical topics. I hope that a similar variety and standard can be kept on line for 1994. So far, I know of our January meeting actually having two topics planned. We hope to have some video footage of the January VHF/UHF field day with actual operation included. Another back-up topic is on line in reserve if circumstances prevent our newsreel type footage materialising.

Our February meeting is always well occupied with the interesting stuff of an AGM. However, it would be very helpful if our March, April and May meetings, at least, could be firmed up to assist the committee's planning and especially the long term promotion in both this column and our weekly broadcasts. If you have a topic or an idea for a meeting topic which needs some development, please speak up and we will give it every consideration and support to help maintain the last year's excellent standard.

I am delighted to say that already two local amateurs, relatively new to our division, have expressed their interest in standing for next year's committee. This extraordinary demonstration of enthusiasm is impressive particularly considering that I hadn't even subjected either of these volunteers to arm twisting or active lobbying. If this positive trend continues, the vigour and innovation within our committee will be mind blowing. I hope that more locals will follow their lead and contribute toward a spirited election next February.

Apart from the two remaining broadcasts on the sixth and thirteenth of this month, our calendar of events will have no more offerings until the new year. I hope that you are able to enjoy some of the summer break and improve your station, complete those top shelf projects and even do some operating. If you have six metres in your HF radio, why not build a beam and sample the incredible propagation during summer. If you are on VHF, I hope to work you both this month and next, particularly during the Ross Hull VHF/UHF contest that commences after Christmas. Novices should check the rules for a category in which they can compete with other novices. A worthwhile opportunity to do some hilltopping and get a taste of operation away from the repeaters.

In conclusion. Best wishes to all our local amateurs and their families. I hope you have a very merry Christmas and take it carefully if you are travelling, we want to see you again in 1994, which I trust will be a prosperous year for everyone.

VK3 Notes

Barry Wilton VK3XV

Christmas Holidays

The Victorian Division Office will close on 16 December 1993 and reopen on 8 February 1994. Membership applications received by post will be processed during this period.

The last Sunday broadcast for 1993 from VK3BWI will be on 19 December. The regular broadcast will resume on 23 January 1994. "For Sale" items will not be transmitted until the Division office reopens. News and information can be posted to the Broadcast Co-ordinator, 2 Alfred Street, Boronia 3155, or sent by fax on Thursdays only to 03 762 2559 between 1.30 pm and 3 pm.

Nominations for Council

Nominations for the 1994/95 Victorian Division Council close at noon on Friday 14 January 1994. Nominations will only be accepted on forms available from the Secretary.

Nomination forms must be obtained prior to the close of business on Thursday, December 16, 1993. Nominations may be returned by ordinary mail to the office, and will be processed during the holiday period.

Special Thanks

The Division Council extends a vote of thanks to those members who provided valuable assistance during the year with a special mention of the following -

Marilyn Syme VK3DMS, for her contribution to the broadcast and the WIA Victoria Club Net;

Len Vermuelen VK3COD, and Max Chatwick VK3WOD, for their assistance with disposals equipment; and

The VK3BWI team of announcers — VK3ENX, JWL, MET, PQ, BRN, BDL, CGT, AVY, ABQ, UV, DTR and EPD.

Repeater Linking

The repeater link between VK3RGL at Mt Anakie and VK3ROW at Beech Forest is now operative and providing an additional service for the Sunday Broadcast.

A 70 cm link receiver has been installed at VK3RNE and it was originally intended to provide a link from VK3RMU via VK3RDU at Mt Major. Site surveys have proved that our old repeater location at Chesney Vale provides a superior path for the intermediate link, and work is proceeding.

Ex President Injured

Alan Noble VK3BBM, a Past President of the Victorian Division, an ex Federal Councillor, and currently an active worker with the WICEN administration, was badly injured in a motor car accident in October. We wish him a speedy recovery and an early return to the hobby.

THE VICTORIAN DIVISION COUNCIL WISHES ALL MEMBERS A MERRY CHRISTMAS AND A PROSPEROUS NEW YEAR!

5/8 Wave — VK5 Notes

Rowland Bruce VK5OU

At the October General meeting, chaired by Garry VK5ZK, a straw poll was taken regarding the Christmas social. In recent years this has been held at the Woodville Community Centre, but despite some good entertainment to accompany the social side of things, the attendance has gradually decreased. It appears that a preferred option is to hold a function at the BGB headquarters and this has been arranged for the evening of 7 December. Listen to the broadcasts for details nearer the time, or talk to someone who has attended the November meeting.

Peter Koen reported on two successful events, the 36th JOTA and Leisure Day in the Park, and Lindsay Collins on Camp Quality. The topic for the night was the North East Radio Group 2 m Morse training beacon.

A tentative booking has been made for a residential Clubs Convention for the weekend of 27/28 February 1994. Is your Club, if you belong to one, planning to send representatives or delegates? If not, why not? This is the chance to "have a go" at the faceless persons who are so often taken to task for the decisions they make and to put ideas forward for consideration. There are twenty-four WIA affiliated groups which are entitled to be represented. Secretaries of clubs should have received letters from the WIA Secretary by now.

Printing difficulties have been overcome for the VK5WI QSL cards and, in particular, anyone awaiting a reply for the 10 m beacon should receive a card soon. Also, the WIA membership certificates have been despatched.

Finally, to the new members for this edition. Welcome to J Dunn, C McCarthy VK5EB, and J Hutchison VK5ZAI. To them, and to all amateurs everywhere, the President and Council of the VK5/VK8 Division wish a very happy and peaceful Christmas.

ar

Help stamp out stolen equipment — always include the serial number of your equipment in your Hamad.

Club Corner

ANARS Represents Australia

The contest season is in full swing. For several years during the weekend before Christmas the various naval/maritime amateur radio clubs have held the International Naval Contest. Any Australian station entering this contest has until now done so as a DX member of an overseas society.

This year is different.

For the first time members of the newly formed Australian Naval Amateur Radio Society will be operating under Australia's flag — putting Australia on the map in its own right!

Membership of the ANARS is open to all amateurs and SWLs who have a professional naval or maritime background.

Details can be obtained by checking into the Australian Naval Net on 3,620 kHz (+/− QRM) from 1000 hours UTC every Wednesday, or by contacting the Hon Secretary, Terry Clark VK2ALG, QTHR in the 1994 Callbook, or by phone at (060) 25 3292.

Raymond Island Convention

The WIA Eastern Zone Amateur Radio Club will be holding an amateur radio convention at A'Beckett Park on Raymond Island from 18-20 February 1994. A ferry ride from Paynesville takes you to a beautiful bush setting on the foreshore of the Gippsland Lakes.

The weekend is planned to cater for both amateurs and their families, with lots of different events and activities for both. There will be the usual trade displays, fox hunts, white elephant stalls, a computer swap and games, childrens' games, packet radio demonstration, radio throwing competition, and much more.

In addition to the above, it is planned to have a number of technical talks on a range of interesting topics.

Other activities available include swimming, canoeing, volleyball and table tennis, fishing, cycling, bushwalking and birdwatching.

A'Beckett Park is a camp retreat and, as such, accommodaton, if required, is provided in cabins with ensuite facilities. There is also provision for camping and caravans. Meals will be provided for those staying for the weekend and also for day visitors.

Registration forms will be included in next month's AR magazine. For any further information, please contact VK3PJ, VK3KME, VK3NMK or VK3AMR.

Chris VK3ME

ar

Technical Correspondence

Program for Coax Traps

I read with interest the article on Coax Traps by Paul Duff in the October issue of *Amateur Radio.* However, the BASIC programme on page 19 is sadly astray: in a couple of places "=" signs are used where there should be "+" signs and in another line the wrong variables are used.

I have taken the liberty of re-writing the programme in IBM compatible BASIC with the mathematics corrected and a couple of refinements of my own. A printout is attached.

```
10  CLS:PI=3.14159:INPUT"ENTER Former Dia. (inches): ",D
20  INPUT"ENTER Coax Dia.(inches): ";T
30  INPUT"ENTER Coax Capacitance (pF per foot): ",CC
40  INPUT"ENTER Desired Frequency (MHz.): ",X
50  FOR N=1 TO 50 STEP .25:L=(D+T)^2*N^2/(18*(D+T)+40*N*T)
60  C=CC*PI*N*(D+T)/12:F=1000/(2*PI*SQR(L*C)):IF F<=X THEN 80
70  NEXT N
80  CL=N*(D+T)*PI*2.54:CL=CINT(CL):PRINT
90  PRINT"number of Turns:";N:PRINT"Coax Length in coil:";CL;"cm.":PRINT
100 PRINT"Add 6 cm. for leads giving Coax Length required:";CL+6;"cm."
110 PRINT"D+T to N*T ratio:";(D+T)/(N*T)
120 END
```

John Fullagar VK3AVY
37 The Avenue
Ferntree Gully 3156

***(Further comment.** Paul Duff agreed with John Fullagar that the original program contained errors. He has produced a corrected but much longer program with "bells and whistles". Unfortunately space does not permit its reproduction here but those interested may write direct to Paul for a copy. Ed.)*

EMC Report

*Hans Ruckert VK2AOU**

EMC the other way around!

The October 1993 issue of "CQ-DL" (the German sister magazine to *Amateur Radio*) reported that the Federal Parliament Secretary of the Ministry for Post & Communication, Dr Paul Laufs, had an interview with the DARC (the German sister society to the WIA) Manager, DB4DL BW Haefner, on unresolved matters of the new planned "Law on Amateur Radio Operation". The proposal, that 100 watts radiated power will become the maximum power radio amateurs will be permitted to use on VHF/UHF amateur bands, has caused quite a stir. The idea behind this yet-to-be released regulation seems to be the intention of the authorities to permit the use of frequencies near the amateur bands for miniature equipment, which is so small, that selectivity providing components are left out. This "lousy equipment" could be affected by legal amateur radio operation if more than 100 watts was used by radio amateurs. Financial considerations are behind this move.

10,000 EMC reports were issued by radio amateurs in Germany, complaining about interference from Channel 6 cable-TV transmissions, and/or from amateur radio signals getting into TV feeder cables with insufficient shielding. BAPT reported that only 5% (!) of the cable TV installations met the shielding requirements and regulations.

Digital Cellphones (submitted by DW Friend VK4OE) "New Science" on page 18 of the 7th August 1993 issue, reports on the EMC problems caused by the increasing use of digital communications methods. We radio amateurs are obliged to use only the narrowest possible frequency spectrum for our communication methods. CW signals must use rounded off pulses and key click filters to avoid generation of a wider than absolutely necessary spectrum; and phone transmissions must have means to limit the amplifier drive level with ALC circuits. Distorted sine waves like pulses are always formed by the fundamental pulse and a string of harmonics having a range of amplitudes. There is the danger that digital phone operation may cause interference to VHF amateur radio reception. Satellite communication, especially, could be affected, because extremely weak signals must be useable.

The three cases above show that amateur radio organisations must be watching those communication methods that directly or indirectly detrimentally affect our communication ability. There are powerful commercial interests involved, working on governments, who do not care about other frequency users.

EMC Radio-Communication, June & August 1993 (submitted by Norm Burton). Not only burglars, but also burglar alarms, are still a problem. Some alarms go off when a radio amateur transmits, whilst in other cases the alarm transmitted a signal near the 2 m band.

The "Vecta Key System" fitted to a car resulted in the following car RF immunity features — 10-80 MHz not less than 50 volt/m, modulated 99% with 1 kHz square waves. Similar results were achieved with transmissions at 30-200 MHz, and 200 MHz to 1 GHz, with an antenna mounted on the boot of the car, and radiating an RF power of not less than 100 watts.

It can be done! G8BQX reports how a helpful telephone company engineer solved the telephone RF breakthrough susceptibility reported by his neighbours, and found on his own phone. Radio amateurs who live in a block of flats have usually the worst EMC problems to face.

Attaching to my TV-set one of those wide-band untuned preamplifiers caused, as expected, TVI on all channels. However, adding also a good Telefunken highpass filter solved the problem, showing that amplifiers without selectivity should never be used. It is usually the community mast-head wideband preamplifier that lacks selectivity from 5 to 500 MHz that is to blame.

Fortunately these amplifiers are illegal in Germany. Every installation of a community preamplifier is checked by a radio inspector to ensure that it contains the necessary TV channel bandpass filters, and offers the required immunity.

G8MNY describes a 70 cm TVI filter and construction details. The likely problems caused by digital telephones are discussed. 15.625 MHz TV line timebase and switch mode power supplies radiation may travel along overhead power lines and cause interference to our shortwave reception. FAX equipment, VCRs, computers are also mentioned as interference sources, re-radiating via overhead power lines.

**25 Berrille Road Beverly Hills NSW 2209*

Federal Technical Advisory Committee (FTAC) Notes

John Martin VK3KWA FTAC Chairman*

New Microwave Records

Interest in microwaves seems to be on the increase, due to the use of surplus tellurometers for wideband FM and Gasfet transverter kits for narrow band modes. The national 10 GHz record (set by VK3KAJ and VK3ZBJ in 1986) fell on 22 April to Roger Bowman VK5NY and Bill Pickering VK5ACY. Bill was operating from Minarapa, and Roger was by the roadside at the Cape Banks lighthouse, a distance of 355.4 km. I have heard a tape recording made by Roger of excellent SSB and noise-free FM signals from Bill. Congratulations. Two days later, Steve Hutcheon VK4ZSH and Neville Mills VK4KOP set a new 10 GHz ATV record, working over 144.3 km. Steve was portable in VK2, so this contact also means a new VK2 state record. Congratulations to Steve and Neville.

Beacons and FM Nets

In the Melbourne area there is a growing problem with FM nets and packet signals moving into the 144.400 — 144.600 MHz beacon band. The same may be happening in other parts of the country as well.

Distant beacons are quite audible to SSB/CW stations if there is no local QRM. FM receivers will not hear these beacons, so many FM operators may not realise that this part of the band is actually occupied. Unfortunately there are some who are aware that they are causing problems but choose to do nothing about it.

The 2 metre band plan allots 20 per cent of the band for weak signal work, beacons and satellites. FM and packet stations have the rest. That seems like a pretty fair go. If 80 per cent of the band isn't enough, it is time to think of other solutions.

Part of the problem is due to pager interference in the top end of the band, and part is due to a desire for a "private" net in what appears to be an unused part of the spectrum. Pager problems can often be cured just by switching to horizontal polarisation. Using SSB rather than FM would provide a greater operating range and allow far more stations to fit in the space available. If these options do not seem feasible then it is time to make more use of other bands where there is unused space, no pagers, and no need to clash with other people.

There are still plenty of unused FM channels on the 6 metre and 70 cm bands, and there is plenty of cheap surplus equipment available. The 23 cm band is ideal for local nets. When the new regulations come in, all licence classes except Novices will be able to use 29 MHz FM. With all these options available, it must be possible for us all to coexist quite happily and not tread on each other's corns.

Private nets are very handy but we must face the fact that their days on 2 metres are numbered. Taking up 25 kHz of the band for the sole use of maybe a dozen people is a powerfully inefficient use of spectrum space. The whole band could fill up with nothing but FM and people would still be looking for more. To FM operators I would say, please give thought to this. And to SSB/CW operators, when you monitor the beacon band and ask FM operators to keep it clear, please do it diplomatically.

*PO Box 300 Caulfield South VIC 3162

WIA News

Contest Rules on Disk

The Contest Newsletter from the International Amateur Radio Union Region 1 Contests Sub-Group, received in the Federal Office recently, carried an appendix by way of a letter from Bernhard Koch OE4BKU, inviting every contest manager and organiser of HF contests to supply him with the latest contest rules.

His aim is to compile, and regularly update, **a world-wide contest database** holding details on all the HF contests around the world, to be available on computer disk. This work is being done under the auspices of the Austrian amateur radio society, OeVSV.

Contest information can be mailed to the OeVSV at:
Theresiengasse 11
A-1180 VIENNA
AUSTRIA
or faxed to 0222 403 1830.

It can also be sent directly to:
Bernhard Koch OE4BKU
Stoob-Sued 21
A-7350 Oberpullendorf
AUSTRIA

International Amateur Radio Union Monitoring Service (IARUMS) — Intruder Watch

*Gordon Loveday VK4KAL**

Monitoring Service

I suspect many observers may think that, because the frequency they have patiently observed, has not been included in the summary of the month, their input is not of value.

Please dismiss that idea now!

All frequencies are painstakingly checked out, but maybe no one else has heard that intruder during the month. I keep track of these logs, but only those having the most information or comments, and heard the most often, are included in the summary. This is because these have the most chance of being further identified on a region basis or by the SMA who, being made up of public servants, have not the same time available as we do.

I do not have the time or facilities to include every logging in *Amateur Radio* (it would take up about 5 pages and be boring for most readers). It takes me about four hours to sift through the log sheets, which are roughly written out on a worksheet before I get around to the word-processor. I then sift again through all comments for possible inclusion to the IARU Region 3 co-ordinator.

For example, the September summary was compiled from 27 pages, a few double sided. I would be very pleased to have at least double this amount, so what about it those States not on my "mailing list"?

Remember, keep a pad handy alongside your mic or key, while looking for DX, to jot down intrusions which are worrying you. For goodness sake don't just complain to your contact about the intruder. Get him or her to put in a log to their respective co-ordinator as well.

Monitoring Service Update

"Action UMS" results are being processed. Approximately 12 member organisations had input.

A group of constant carriers have been consistently reported between 14020 and 14045 kHz. Any information on the likely source to the Monitoring Service please.

Numerous reports have also been coming in of pulsed signals in the lower end of the 17 m band. The pulse rate varies.

Readers are reminded that the 80 m band is shared as is 20 m above 14250 kHz.

Recent band conditions have not been very favourable for monitoring in Region 3. Our biggest constant offender is still the CIS group UMS, etc, and this may be due in a large part to the reported low angle radiation antenna complexes they use. Single letter beacons from CIS also feature constantly around 7039.5 kHz.

Intruder Watchers

I would appreciate it in future if your logs contained, as far as possible, your Maidenhead locator number, beam headings with observations, where possible, or direction of horizontal dipoles, along with, of course, signal strength, frequency, date, time (UTC) mode and ID if heard.

Reason? The SMA have decided to monitor our observations, as far as possible, in the same areas they have been reported from. Whatever our opinions are we must give them the chance to prove they are "fair dinkum".

*Federal Intruder Watch Co-Ordinator, Freepost No 4 Rubyvale QLD 4702 or VK4KAL@VK4UN-1

Stop Press

First Australian 6 Metre EME Contacts

The Federal WIA has just received a fax from Steve Gregory VK3OT/VK3SIX of Hamilton, giving the following details:

On Sunday 7 November 1993 at 1539Z VK3OT and W6JKV (Los Altos Hill, CA) made a two way earth-moon-earth (EME) contact on CW. This is believed to be the first completed two way EME contact ever made from VK on 6 metres.

Less than an hour later (at 1625Z) Steve made contact with K6QXY at Glen Ellen CA, (some 100 miles north of San Francisco). The distances involved are 12,800 and 13,000 km. The contacts took place during the ARRL EME contest. Steve was running 1 kW CW (by special permit) into a 13 dBd 2.5 wavelength Yagi.

Spotlight On SWLing

*Robin L Harwood VK7RH**

Amazingly another year has come to an end. We have seen quite a shake-up in programming and administration of various international radio stations over the past twelve months and it is going to continue in 1994. For example, the surrogate American clandestine broadcasters, "Radio Free Europe", and Radio Liberty ("Radio Svoboda"), based in Munich, are axing half of the programming staff by 1995, with the VOA assuming control and responsibility of technical operation, although editorial control will still remain in a reduced RFE/RL. It is also planned to move the RFE studios from Munich to Prague, in the Czech Republic. This move follows an assessment into the high cost of maintaining both Radio Free Europe and Radio Liberty, following the end of the Cold War and the alteration in political boundaries and governmental structures within Eastern Europe and the former Soviet Union.

As well, several language services are being scrapped or scaled back. For example, Hungarian and Afghan dialects have already been axed and Polish, Czech and Slovak are to have their hours reduced. Radio Liberty ("Radio Svoboda"), which broadcasts to the former Soviet Union, will continue for the present and be located in Munich.

Other broadcasters have been re-assessing their priorities and strategies into the next century. Radio Netherlands in Hilversum recently had a review of its operations and, although it is too early to speculate what will happen, there will nevertheless be changes. Deutsche Welle in Cologne, Germany, has also re-evaluated its strategies and targets, particularly since the re-unification of East and West. The Deutschlandfunk (DLF) which used to broadcast to European audiences has been absorbed into DW. DLF relied mainly on high powered MW senders and these have now reverted to broadcasting domestic programs similar to our own Radio National. As well,some language sessions will be cut back on shortwave, particularly to European audiences. Programming in Japanese and Dutch will be axed and broadcasts to Latin America will be reviewed.

The World Service of the "Christian Science Monitor" in Boston, Mass, has as well been forced to cut back on programming due to financial constraints. They had a large financial loss on their satellite and cable TV service which forced its closure. Also, the shortwave service has been cut back from a two hour block to one. There are two different segments, one a relay of their domestic service to American Public Radio, and the other is produced by their international service. The religious programming at weekends is produced by the Church and not by the "Monitor" and is separate from it. The transmitters and site in Maine, WCSN, is up for sale to the highest bidder to help fund the purchase of an extra 500 kW sender at the North Carolina site of WSHB.

And another piece of Australia's shortwave history reportedly comes to an end on 31 December when VLQ in Brisbane, which has relayed the ABC for over 50 years to the Outback, ceases on both 4920 and 9660 kHz. It is unclear at this stage whether VLW in Perth, which also has been on HF, will also join VLQ on the same date. Fortunately, the ABC Northern Territory Service will continue on 2 and 4 MHz. The senders located in Katherine and Alice Springs are shared with an aboriginal media service, while the Tennant Creek sender is exclusively running the ABC Territory Service.

I was disappointed to miss out on hearing the annual "Radio St Helena" shortwave test on 15 October but propagation ruled this out at this location. There were no signals present. Overseas reports indicate that some in Europe did hear it but only in spots. I also believe that next year, on 14 October it is said, that another broadcast may happen. I am sceptical at this stage.

It only remains for me to wish you and yours the very best for this festive Season and take care with your actions. A Happy Christmas and hope that 1994 will be saner and more peaceful than this year has been. All the best and hope your listening will bring you satisfaction in the future.

73

Robin L Harwood
**52 Connaught Crescent West Launceston TAS 7250*
VK7RH@VK7BBS

BT

Repeater Link

*Will McGhie VK6UU**

Extra Information

I received a packet message from Ron VK4BRG asking me to let you know that an article he presented in the October issue of *Amateur Radio* was not complete. The article appears on pages 10 and 11 and is a voice repeater control unit. Missing is information on programming the callsign, etc and a veroboard layout with construction notes. If you want this information Ron can make it available if you send him a medium size SASE plus a couple of 45 cent stamps to cover photo copying.

FM 828

Little did Philips know when they developed the FM 828 that it would become the back bone of the amateur repeater network. This radio is the one most used in our repeaters. There are several versions for VHF low band, high band and UHF. The circuitry is almost the same for the VHF low and high band. The UHF model has some similarities but largely is not the same.

I wrote to Philips and asked their permission to reproduce the VHF circuitry in *Amateur Radio* and they have agreed.

As the circuit is large and cannot fit on A4 size I have divided the receiver into 3 sections, front end, IF, and audio and mute. This month is the first drawing and shows the RF amplifier, crystal oscillators, frequency multiplier and mixer. Included in the drawings are typical voltages to be found. As an example 3V7 means 3.7 volts.

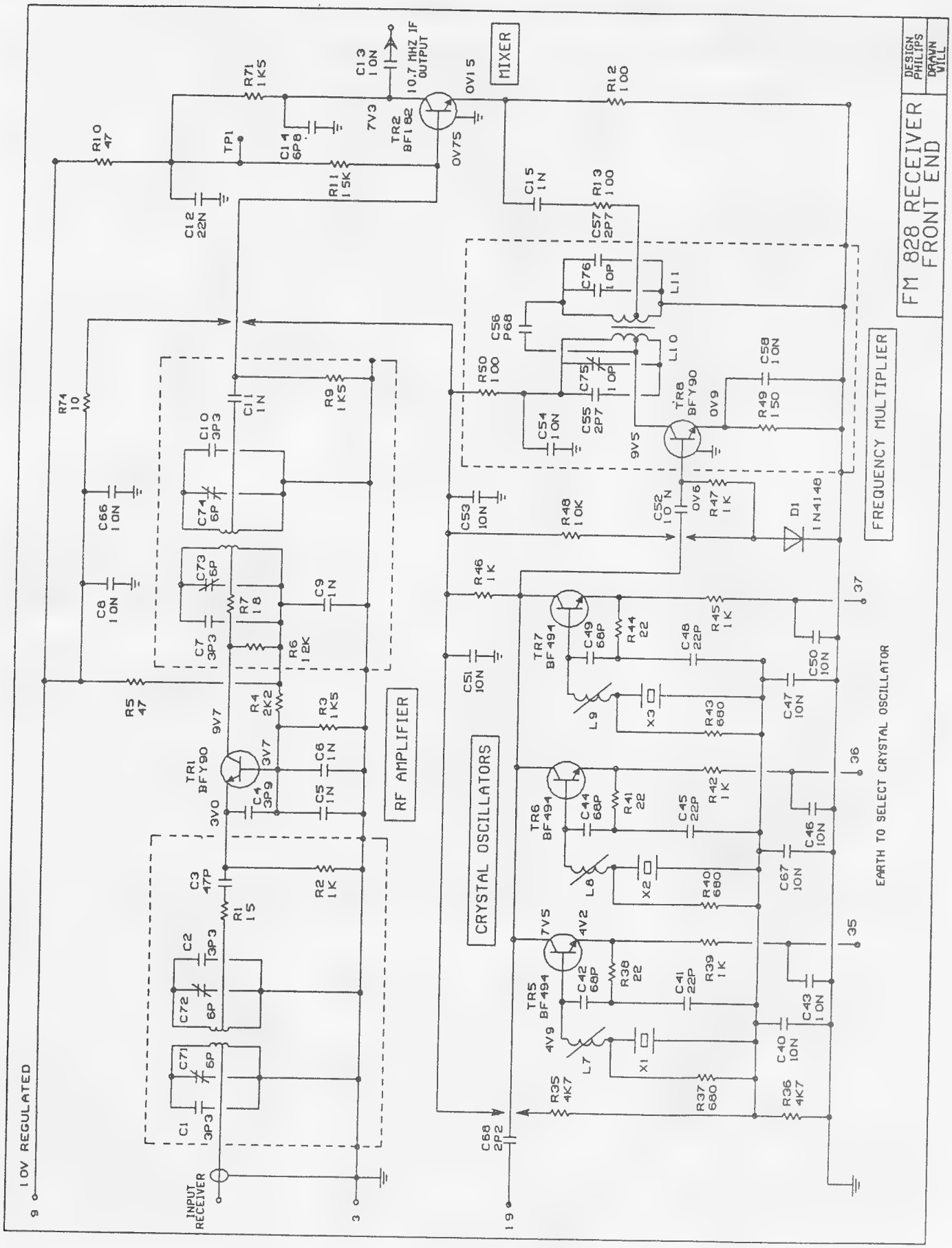
For those of you who only have a poor photo copy of the original circuit this may be useful. It will take a while to present all the circuits, some six in total including the transmitter, but the increased size and module approach will fit an A4 folder or booklet.

All these circuits were produced on computer using the CAD program Draft Choice. If you would like a copy of this CAD program and the FM 828 computer circuits let me know. Not all the FM 828 circuits are completed yet, as they take considerable time to draw onto computer. These circuits can also be made available via packet in 7 Plus format.

The CAD program Draft Choice is an excellent circuit drawing program and being shareware is easy and cheap to obtain. If ever amateurs were to agree on a CAD program for circuit exchange, this would be my recommendation.

**21 Waterloo Cr Lesmurdie 6076 or VK6UU @VK6BBS*

BT


FM 828 RECEIVER
FRONT END
DESIGN PHILIPS
DRAWN VILL
MIXER
FREQUENCY MULTIPLIER
RF AMPLIFIER
CRYSTAL OSCILLATORS
10V REGULATED
INPUT RECEIVER
10.7 MHZ IF OUTPUT
EARTH TO SELECT CRYSTAL OSCILLATOR
TR1 BFY90
TR2 BF182
TR5 BF494
TR6 BF494
TR7 BF494
TR8 BFY90
D1 1N4148
L7
L8
L9
L10
L11
X1
X2
X3
C1 3P3
C2 3P3
C3 47P
C4 3P9
C5 1N
C6 1N
C7 3P3
C8 10N
C9 1N
C10 3P3
C11 1N
C12 22N
C13 10N
C14 6P8
C15 1N
C36 10N
C37 10N
C40 10N
C41 22P
C42 68P
C43 10N
C44 68P
C45 22P
C46 10N
C47 10N
C48 22P
C49 68P
C50 10N
C51 10N
C52 10N
C53 10N
C54 10N
C55 2P7
C56 P68
C57 2P7
C58 10N
C66 10N
C67 10N
C68 2P2
C71 6P
C72 6P
C73 6P
C74 6P
C75 10P
C76 10P
R1 15
R2 1K
R3 1K5
R4 2K2
R5 47
R6 12K
R7 18
R9 1K5
R10 47
R11 15K
R12 100
R13 100
R35 4K7
R36 4K7
R37 680
R38 22
R39 1K
R40 680
R41 22
R42 1K
R43 680
R44 22
R45 1K
R46 1K
R47 1K
R48 10K
R49 150
R50 100
R71 1K5
R74 10
3V0
3V7
4V2
4V9
7V3
7V5
9V5
9V7
0V6
0V9
0V15
0V75
TP1
9
19
3
35
36
37

How's DX

*Stephen Pall VK2PS**

December, the last month of the year, reminds us not only of the approaching Christmas season but also of the end of our calendar year. Like Janus, the Roman god of "endings and beginnings", we look back on the past 12 months and take count of the important DX events which took place during this time.

But before we do that, we have to remind ourselves and acknowledge that many of the new countries which are now considered as a separate DXCC country were born out of civil war, death, destruction, hunger, suffering and human misery. Many of these horrible events are still continuing to-day as you read these lines. When taking part in the Christmas festivities, let's think of the sufferings in Somalia (T5) — Cambodia (XU) — Ethiopia (ET3) — Ghana (9G1) — Uganda (5X) — Eritrea (E3) — Croatia (9A) — Slovenia (S5) — Bosnia-Herzegovina (T9) — Macedonia (Z3) — Serbia (YU) — Georgia (UF) and Azerbaijan (UD6), just to name a few.

On the peaceful side of DXing we saw activities from the Czech Republic (OK) — Slovakia (OM) — Howland Island (AH1) — Chatham Islands (ZL7) — Desecheo (KP5) — Kingman Reef (KH5K) — Palmyra (KH5) — Spratly Islands (9M0) — Libya (5A) — Mellish Reef (VK9M) — Tunisia (3V) — Tristan da Cunha (ZD9) and Christmas Island (VK9X).

The above list contains only the most important events which took place during the past 12 months. What about the future? Despite gradually deteriorating propagation conditions and the reduction in sunspot activity, DXing is alive and well. More and more contacts will be made on the lower bands, 30, 40 and 80 metres. The 20 metre band will still be useable but with a less predictable certainty.

I wish all my readers a joyous Christmas and a peaceful, happy and healthy New Year!

Christmas Island — VK9

Christmas Island is an Australian Territory in the Indian Ocean, lying in latitude 10° 30' S and longitude 105°40' E, about 355 km south of Java and 2625 km north-west from Fremantle in Western Australia. The greatest length of the island is about 20 km, the greatest width is about 15 km and the narrowest is about 6 km.

The island was discovered in February 1615 by Richard Rowe, master of the "Thomas", and he gave an account of it in a letter to the East India Company. The island appears on a Dutch chart of 1618 as Moni. Later charts give the name of Christmas Island. HMS "Flying Fish" surveyed the island in 1886 and it was found to be unusually rich in vegetation and bird life. Christmas Island was formally annexed to Great Britain by HMS "Imperieusse" in 1888. Subsequently it was placed under the Straits Settlement Government. The island was not inhabited at the time of annexation and the first settlement was established at Flying Fish Cove in November 1888 by George Clunies Ross. Soon after this rich phosphate deposits were discovered and the resulting mining affected very much the animal and plant life.

Under the Christmas Island Act 1958-9 the administration of the Island was transferred to Australia by the United Kingdom on 1st of October 1958. The present population of the Island is well over 3000. Progress has caught up with the island. There is now a scheduled air service twice a week as against the former charter service by the government.

In the August issue of *Amateur Radio* under "Future DX activity" I hinted that a well known DXer might operate from there with a special call.

Bob Winn W5KNE, Editor of the DX Bulletin "QRZ DX", advised me that his proposed activity in August has been delayed until late in November due to transport difficulties. He will be active from Christmas Island from 27 November to 15 December on most HF bands, CW and SSB. At this stage it looks like he will be the only operator.

Bob will be signing VI9XN, a special call celebrating the 350th anniversary of the naming of the island. QSL to Bob Winn W5KNE, 635 Williams Way, Richardson, TX 75080, USA.

Nepal — 9N1

Baldur DJ6SI is one of the few DXers who keeps his plans to himself and never announces in advance the country from where he will be operating next. It was on the 25th of August when Baldur and his friends appeared on the bands for a 12 day activity from Nepal. I received his QSL card within 4 weeks of the operation, being mindful that he keeps the logs open only for 6 months after the event. With the card he sent me some information about the radio amateur scene in Nepal. Here are some snippets from his letter:-

Nepal licensed three local amateurs in July 1993. Satisa is 9N1AA, a lawyer in Kathmandu who is interested in RTTY; 9N1HA is Surish, employed by the Nepalese Ministry of Communications and his interest is SSB; and Ram 9N1RB is connected with electronics and is a CW enthusiast.

Unfortunately, due to the harsh economic climate, none of these gentlemen is on the air because of the 300% import duty on radio amateur equipment. Baldur took some transceivers with him with the intention of leaving them behind. He did not succeed. He had to take the FT747, the TS50, the FT757 and other ancillary equipment out of the country again. Baldur and his friends had to pay US $250 per head as a licence and equipment usage fee and waited for four days for documentation. Their licences were the first given in writing (on rice paper) by the Nepalese Government.

Baldur DJ6SI operating as 9N1BD.

Even Father Moran, the late 9N1MM, (according to Baldur) only had verbal permission from the Nepalese King himself to operate. The equipment and the operational area of the group were inspected by a special commission prior to starting the activity. The original logs had to be left behind. However, Baldur was allowed to take copies of the logs with him.

Baldur DJ6SI operated in the SSB and CW mode as 9N1BD, his friend Henry DJ6JC operated RTTY as 9N1HL and Claus, ex 9G1AP, had the callsign 9N1AP. Conditions were not the best during the short stay. Kathmandu lies in a deep valley and the towering Himalayas did not assist much in the propagation towards the north.

Antennas used were a G5RV, dipoles for 20 and 15 metres and a Fritzel FD4. They made 7000 QSOs despite the fact that each night between the local hours of 7 pm and midnight there was a two hour blackout — no electricity! Opportunity presented itself to give some training to the three local amateurs. According to Baldur, Satisa, Surish and Ram will be on air only if some outside amateur group is willing to donate the equipment and also to undertake to pay the 300% import duty.

The QSL details for the group are 9N1HL to DJ6JC Henry Lumpe, Zur Beerbeeke 10, 30890 Barsinghausen, Germany; and 9N1AP and 9N1BD to DJ6SI Baldur Drobnica, Zedernweg 6, 50127 Bergheim, Germany. In both cases note the new German postcode numbers.

There is quite a controversy about the QSL practices of Baldur. He publicly declared previously that he keeps the logs open only for six months after the event and that he requires either two "green stamps" or two IRCs for a QSL reply. In a handwritten note to me he says "In Germany the post office pays for one new or old IRC only 2 DM, but the airmail overseas cost 3 DM. A sea mail letter cost only 2 DM". According to some news circulating on North American packet clusters (18th October 1993) Baldur now asks for three "green stamps" or three IRCs for each 9U5DX QSL card. The exchange rate between the American and German currency on the 19th of October was US$1.00 = 1.645 DM. I sent him two "green stamps" and received three 9N2 cards, one for myself and the others for a VK4 and a VK7 amateur which I forwarded to the respective addresses.

Eritrea — E3

I mentioned briefly in the last issue of *Amateur Radio* "that Eritrea was reinstated by the ARRL Awards committee as a DXCC country". The decision was made on the 29th of September and the effective date of reinstatement is the 24th of May 1991. Eritrea was deleted from the DXCC countries list on the 14th of November 1962 when it was annexed by Ethiopia. The Eritrean Peoples Liberation front took effective control of the country in 1991. However, formal declaration of independence came in 1993 following a national referendum on the issue. The ARRL Awards committee felt that there was sufficient evidence of sovereignty to justify the 1991 reinstatement date. The decision means that, in practice, all recent operation will count for DXCC credit. Cards will be accepted by the ARRL DXCC Desk as from the 1st January 1994.

Peter I Island — 3YI

Despite the sudden illness and subsequent surgical operation on Jerry Branson AA6BB, who is the financial organiser of the expedition (NB Jerry is out of danger and improving day by day at home), the expedition is on track to commence operation on the 1st of February 1994.

On the European side, ON6TT has assembled about two tons of equipment and camping gear, additional generators, stakes, chairs, tables, sledge hammers, 300 kg of propane gas, large pots to melt snow, tarps, ladders, snow shovels, 4 km of radial wire and 200 m of chicken wire for the ground system, canned fruit, etc. The list is endless. Each individual operator has to supply his own polar outfit with a cost of well in excess of $1000, plus his own substantial financial contribution to the expedition.

A further $18,000 worth of polar tents, special dried food rations and tested radio and antenna equipment is now being prepared for shipment in the US. What is needed now is money. If you need Peter I Island as a DX country now is the time to test your own generosity. Now is the time to send money to the expedition, not later with the QSL cards. Send your donation to AA6BB, Jerry Branson, 93787 Dorsey Lane, Junction City, OR 97448, USA.

Slims, Pirates and Others

Psychoanalysts say that one has to have an immense inferiority complex combined with a good dose of jealousy to cause you to become a radio amateur pirate. We do hear from time to time of such activity, usually a few days before a rare DX event.

Things got so bad in San Marino that the Amateur Radio Society of that republic (ARRSM) has issued a list of the following pirate calls for which QSL cards sent to their Bureau will not be answered: T7CV — T7KA — T7QU — T7ST — T7ZQ — T7ZT — T72AC — T73A — T76P — T77AL — T77AW — T77GN — T77HM — T77L — T77KA — T77KU — T77Q — T77QN — T77P — T77PK — T77PT — T77Z — T77ZA. Further pirates, as published in various DX outlets, are C31NP — 5Z4DX? — SY/DK7PE — TT8A — 9D2CW? — C31/OZ3JK/m and had no proper authority to operate. Closer to our shores one has to mention "Yvonne" who operates CW only allegedly from "Ducie" island and who appears regularly around 7005 kHz as VR8B working the Japanese around 1200 UTC and sending them many" 88". "She" can be heard with signal strength 9+ in Sydney so the pirate is not very far away, but where??

Future DX Activity

- It was reported that FH/F5NCU will be active from Mayotte Island in the Indian Ocean as from the 10th of October until August next year. QSL to F5NZD.
- Look out for JG2XYV who is operating from the Maldives as 8Q7AA. He will be there until June 1994. QSL to Box 2007, Mali, Maldive, Indian Ocean. Hopefully the mail gets to him.
- At the end of October there was still no activity reported from Pratas Islands (BV0ARL/BV9). It is rumoured the DX group is waiting on the cooperation of the authorities who will arrange transport. Likely start will be the end of November.
- KH4/N7TNL will be active from Midway Island until the 6th of January, primarily CW, 10 to 160 metres including WARC bands. QSL to W1OO.
- Paulo Mauro IV3UHL will be touring the Pacific from 15th November till April 1994 with the following stopovers: 15 Nov — 1 Dec, 3D2 Fiji; 1 Dec — 31 January, A35 Tonga; 31 Jan — 16 February, 3D2 Fiji; 16 February — 8 March, ZK1 South Cook; 8 March — 1 April, F08 French Polynesia. Intended frequencies to be used are CW:- 3505, 7005, 14005, 21005 and the WARC bands; SSB:- 7095, 14260, 21260, and the WARC bands.
- Robert 3B9FR is active again on Rodriguez Island after being absent for almost two years. His address is Robert Gerard Felicite, PO Box 31, Rodriguez Island, Indian Ocean, via the Republic of Mauritius.
- Al ST2/G40JW was worked on the 17th of October by VK5WO. Al is situated in the Sudan and it is assumed he will be there for a few months. He operates on 14062 kHz using only 15 watts to a dipole. He is operating around 1700 UTC which is his local evening time but very early morning in eastern Australia. He is very keen to work VK

because he was brought up in Adelaide. His QSL address was given on the DX cluster as A Szondy, Box 4010, Khartoum, Sudan, Africa.
- C91S in Mozambique will be active again in the near future. QSL to W8GIO.
- Dr Armstrong 9M6BZ was reported planning a new Spratly expedition in the same group, but on a different island.

Interesting QSOs and QSL Managers

- YI0BIF — 14251 — SSB — 0622 — Oct. QSL to the Manager, Box 55072, Baghdad — 12001 — Iraq.
- VP2VE — Lee — 14226 — SSB — 1143 — Oct. QSL to WA2NHA, Howard Messing, 90 Nellis Drive, Wayne, New Jersey, 07470, USA.
- ZC4ML — Mark — 14220 — SSB — 0630 — Oct. QSL to G4LSL, B R Lawrence, Tranby Meanee Rd, Scotton, Catterick Harrison, N Yorks DL9 3NB England or via the ZC4 QSL bureau.
- 9H3SB — Holger — 14245 — SSB — 0621 — Oct. QSL to DL9XAT Ralf Waitschies, Eichenallee 13, D-2057, Reinbek 5 Germany.
- OD5QS — Ola (YL) — 14243 — SSB — 0714 — Oct. QSL to the Manager, PO Box 121, Tripoli, Lebanon or via the Bureau.
- ZL5PX — Geoff — 14213 — SSB — 0708 — Oct. QSL to ZL3PX, G A Chapman, 8 Boys Place, Christchurch, 8001 NZ.
- PJ7/K1VSJ — Howie — 14226 — SSB — 1242 — Oct. QSL to K1VSJ Howard M Bromberg, 21 Wingate Rd, Providence — RI 02906, USA.
- VK9LO — 14027 — CW — 1247 — Oct. QSL to K6VNX Arien T Turiff, 8819 E, Calitta St, San Gabriel, CA 91775 USA.
- EL2PP — Monica — 14222 — SSB — 0611 — Oct. QSL to N2CYL Toni A Bull, 726 Linden Ave, Pleasantville, N J 08232, USA.
- Z32ZM — Mome — 14222 — SSB — 0551 — Oct. QSL to YU5CXY Radio Club Nicola Tesla, Box 179, 91300, Kumanovo, Macedonia.

From Here There and Everywhere

- Not only Sydney and Wales celebrated the 75th anniversary of the first direct wireless message between the two countries (See AR Nov 93 issue). The small village of Follina, in the Province of Treviso, near Venice in Northern Italy had a special event station operating on the 24th of October with the callsign IY3GM, the commemorative Marconi station celebrating the event in which Marconi himself played an important part.
- The Spratly Island cards — 9M0S — are ready and you could have had your cards by now. It is interesting to note that from the 17506 CW contacts only 147 QSOs, and from the 17647 SSB contacts only 342 QSOs, were made with the Oceania region, which contains 48 DXCC countries.
- Nigeria celebrated 33 years of independence. Some amateurs used the prefix 5N33 to celebrate the event.
- Randy 9G1XA closed operations in Ghana on the 26th of September with a total of 18000 QSOs completed, mostly CW on the WARC bands. QSL to K0EU.
- Cyril G2HDR quotes an article in the "Family Tree Magazine" that the Canadian post office is very zealous about the correct use of postcodes. Mail which carries an incorrect code, or only a PO Box number without the name of the boxholder, will not be delivered.
- Due to propagation path changes the ANZA net (21205 kHz, control VK4CPA) will start the check-ins from 0500 UTC.
- It was reported that Marcel ON4QM could be active in the future as S92QM.
- 7X2LS — Sadek — changed his direct QSLing address to S Laskri, 47 Rue Voltaire, Leval Louis Perret, 92300, France.
- HZ1AB — Ed — is putting in a very strong signal exceeding S9 from Saudi Arabia on the various nets. He has a 900 foot rhombic at 80 feet, a 160 m Delta loop with the apex at 120 feet, and 1200 feet of two wire Beverage antenna.
- 5X1B has given a new postal address as Jim Brandenburg, American Embassy, PO Box 7007, Kampala, Uganda, Africa. This differs from the address given in May.
- 5R8DS was active in October on the 10 MHz band, CW. QSL to Ben, Box 404, Tana, Madagascar.
- Radio Club FK8KAB/portable was active on 15 and 16 October from Teoudie Beach celebrating the 100 years anniversary of the opening of the submarine cable and the first telegraphic message from "Mon Repos" beach near Bundaberg to Teoudie Beach New Caledonia.
- Paul 3B8AD has reported that the activity of FR5ZQ/J from Juan De Nova ceased on 7 October. It is now only a weather station and future activity from that Island is most unlikely.
- Heard Spiro — ZA1N — giving his QSL address as Radio Club of Tirana Box 66, Tirana, Albania.
- HS0ZAL Linda and HS0ZAK John are very active. Both are associated with a hospital in Chachoengsao. QSL to N4TMW.
- ET3BH is active on 21027, 18136, 18142, and 24960 kHz. QSL via SM3HLL.
- Contrary to previous news about Monk Apollo's SV2ASP/A activity from Mt Athos, the reality is "negative". Apollo is still in silent protest and is not talking to the world except exchanging greetings in Greek with Selim OE6EEG. When JA3MNP and SV2WT were visiting Mt Athos they were allowed to make only 10 RTTY contacts because of the protest by Monk Apollo.
- Roger G3SXW left London on the 19th of September for Tristan da Cunha and started up as ZD9SXW on 30 September. He was active on all the 9 bands. He is an excellent CW operator and it was a joy listening to his contacts. He was quite a good copy in Eastern Australia early in the mornings on 21 MHz. I did not manage to break the "wall to wall" activity of the Ws and JAs when working on the long path in the direction of the North Pole. As at 18 October Roger had made 21000 QSOs and closed operations on 22 October. QSL to his home call, Roger Western, 7 Field Close, Chessington, Surrey, KT9 2QD, England.
- The CQ WW SSB Contest (Oct 30-31) and the CQ WW CW Contest saw at least 70 very exotic DX callsigns activated. As it is very difficult in a contest situation to obtain proper QSL routes, I am prepared to assist you. Please send all your QSO details (date, mode, band, time, callsign) with a self-addressed, stamped envelope to me and I will give you the QSL route if I have it.

QSLs Received

9N1BD (1M MGR DJ6SI) — ET3DX (6W MGR JH1AJT) — W51JU/KP1 (6M OP) NF6S/KP1 (6M MGR W51JU).

Thankyou

Thanks to all of you who kept me informed and who assisted me in compiling these notes, especially to VK2AML, VK2KCP, VK2KFU, VK4CY, VK40H, VK5QW, VK5WO and DJ6SI, and publications QRZ DX, The DX Bulletin, and the DX News Sheet.

Good DX and 73

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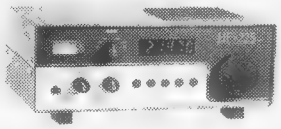

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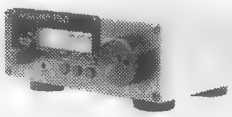

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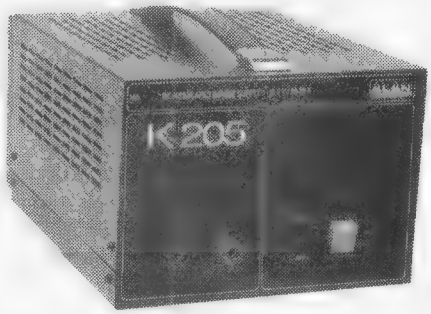

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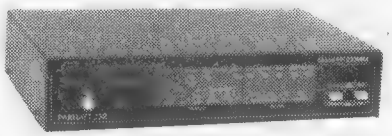

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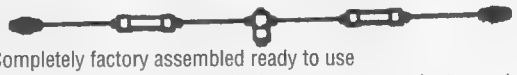

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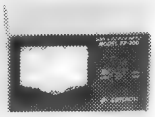

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Six metres

Generally the band has been quiet. On 26/10 **Gary VK4AR** reported working some VK3s via Es. His previous DX contacts had been in July when VK3s and T30JH were worked. **Adam VK3ALM** (ex VK3YWV) reports that 23/10 was the first Es this summer season, with DDQ-0 weak, followed by the VK4RGG beacon at 1000 with signals 579. Next heard was Ron VK4BRG at 1010, and at 1026 Gary worked Trevor VK4AFL with signals to S9+. His previous DX contacts had been JA8CAR on 25/3 and T30JH on 10/4.

Europe

There is a mixture of information from Geoff GJ4ICD and Ted G4UPS but although there has been a general reduction in Es activity, it appears there are so many operating 50 MHz that any form of Es improvement will result in contacts. I note that the distance from London to Madrid in Spain is about 1250 km (similar to Sydney from Adelaide) which is a good Es distance, hence their regular working to Spain. So there would be quite a number of countries around 1600 km, the prime distance for single hop Es. London to Paris at 350 km would need to be short skip.

KD4MAE will operate from Saudi Arabia for two years with the probable call-sign of 7Z1AB. Geoff GJ4ICD has sent a beacon to Eastern Malaysia to operate on 50.014 MHz with the call-sign 9M6SMC, this could be a useful beacon for us to monitor.

One not so useful is Eric F5JKK (ex-TL8MB) operating with the prefix 5T5 from Mauritania (IL30AM) which takes in a large slice of the Sahara Desert. He has worked G land via double hop Es. On 11/10 he had a TEP opening to PY5, ZP and LU at 1630, followed at 1700 by a path into SV9 and 5B4. Incredible!

As time goes by I am sure we are going to hear more of these TEP paths simply because there are so many countries now operating 50 MHz. It is quite apparent that TEP paths are not confined to north-south directions, they can be at oblique angles to the equator. As we slide deeper into the low part of Cycle 22, I also believe there will an upsurge in double-hop Es providing signals to the northern part of Australia from Asia and the Pacific regions. Don't put away your six metre gear too soon!

The 50 MHz DX Bulletin reports a message from 9H5EE stating that Edmond ON1LGS (ex-3X1SG), will visit Vietnam for 15 days in December 1993 and then for six months during 1994 and is likely to operate on six metres.

Ted Collins G4UPS sends a list of 143 call-signs licensed to operate from Greece. September activity included the following call-signs: 4N1SIX, 9H1, CN8, CT0WW, EH, EH9, OZ6, S55ZRS, SV1, SV9, SM7, SP4, YT1. This is a much reduced list compared with July and August. However, it is interesting to note that Ted had almost daily contacts with SM7AED at a distance of around 2000 km over a mostly water path.

First Worked on Six Metres

This list continues to be of interest and I have received several letters since the last list was published in September, so there will be some more alterations. My greatest regret is that there must be many operators in VK who have no access to this list, due to not receiving *Amateur Radio* magazine, some of whom may well have worked countries earlier than those listed.

However, I can only do my best and I appreciate those people who take time to write with up-dates or additions. I am not rushing to publish the final list as, when time permits, I do some sleuthing of my own where queries have been raised and I do have the advantage of knowing the times of contacts. More later.

With the passing of some of our oldest amateurs, I suppose it is now too late, but wouldn't it be nice to know the first two Australian amateurs to work one another on 56 MHz or five metres as it was known. Such a contact was probably made prior to World War II. Perhaps our remaining senior members or their descendants could contact me if they are able to provide any definite information. Also, I wonder who made the first five metre contact to a station outside Australia? Outside Australia would commence with New Guinea, New Zealand etc.

Lance VK4ZAZ has raised the issue of the non-inclusion of KA call-signs. KA was a special prefix used by the US occupation forces in Japan to 14 May 1972 after which they reverted to JA. For starters, Lance suggests KA7AX worked on 22 June 1960. Who else?

Ross Hull Memorial VHF-UHF Contest

John Martin VK3ZJC/VK3KWA has forwarded advance information regarding the above contest and I draw your attention to the 1993-94 rules which are published in *Amateur Radio* this month, the contest running from 1800 Saturday 25/12/93 to 1800 Sunday 16/01/94. In Eastern Summer Time that means you start at 5 am on Sunday 26/12.

John asks that you should not operate on the DX calling frequencies of 50.110 and 144.100, and he prefers that you use 50.125 as the lower limit for contest activity, in fact, he states that he will disqualify anyone who consistently carries on any contest activity on 50.110. You might be forgiven for thinking "At this part of Cycle 22 what DX is likely to be on 50.110?" That's true, but then you never know all the capabilities of six metres, so leave it free, just in case — after all, it is actually an international calling frequency.

For local contacts (which includes Es contacts), he says that it would be better to help populate the 52-54 MHz segment of the band. For those who remember earlier days, we used 52.050 as a calling frequency and there is plenty of room in the first 200 kHz to fit in all stations likely to be operating at any one time. If we did that it would bring back memories of the crystal-locked AM days when we heavily populated the first 500 kHz!

The 1994 VHF-UHF Field Day Contest will be held over the last weekend of the Ross Hull Contest, with the rules similar to last year, and I urge you to join in both contests and to send in your logs. I regret my physical impairment no longer allows me to go into the field, but for many years I made an annual pilgrimage to some favourite hill-top, and in most cases, enjoyed every moment of it.

On the subject of the Field Day Contest, **Doug Friend VK4OE**, has advised that he will be operating portable from a selected spot near Dorrigo in northern NSW, locator QF59GW, with a good take-off in all directions except, broadly speaking, west where there is some higher ground, but at a distance not likely to provide too many problems.

Doug will operate on all bands from 50 MHz to 2.45 GHz with the prime purpose of working DX but also to participate in the contests. From a similar but slightly inferior position last March, in the John Moyle Field Day he had some contacts to Brisbane on 1296 MHz. Given reasonable propagation conditions he expects contacts to Sydney and Brisbane on 144 and 432 SSB to be relatively easy and special attention will be given to 1296 MHz.

Operating times will be from 0900 on Saturday evening of 15 January to some time on Sunday 16/1 afternoon (or evening), depending on conditions, using SSB and CW. He will be calling and listening on 144.100, 432.100 and 1296.100 and will shift to 144.115 and 432.115 for

sustained operating. On 50 MHz the frequency will depend on band conditions and there should be no problems with Es contacts. He will be operational between 2.40 and 2.45 GHz for contacts by arrangement! On the subject of arranging contacts, if 144 or 432 cannot be used then Doug could probably be contacted by cellular telephone on 018 191 066.

Equipment used will be: 144: 150 watts to 2 x 10 el DL6WU; 432: 130 watts to 2 x 21 el. DL6WU; 1296: 60 watts plus mast-head amp to 4 x 55 el. loop yagis; 2.4: 4 watts plus mast-head amp to a 45 element loop yagi. He also will appear from time to time on 146.500 and 439 MHz FM. (Sounds like the type of portable station I used to have in my latter years .....5LP).

Doug also mentioned that during January 1993 he operated on 1296 MHz from Siding Spring and contacted VK1s, VK2s and VK4KZR/4 at Mount Mowbullan, north of Toowoomba, the latter setting a new Queensland record for that band. Unfortunately, he forgot to tell me about it!

The microwave bands

A letter from **Mark VK5EME** indicates things are really "humming" in South Australia in regard to the microwave bands, and thought is being given to the formation of a VK5 UHF/Microwave Group. Microwave kits are being designed with new transverters for 1.2, 2.3 and 3.4 GHz.

Mark is presently in the production of an ATV repeater with an FM output on 2372 MHz and an FM input on 1250 MHz. Secondary receiver VSB frequencies are 426.25, 444.25, 579.25, 1246.25 and 1286.25 MHz. There are plans for similar equipment on 2328 and 10345 MHz FM.

Beacons: Mark says that new beacons for VK5 are on 1296.550 MHz 60 mW output — operational and has already been heard in VK6; 2304.550 MHz 9 mW output — operational. The next project is a beacon for 10368.550 MHz while others are planned for 2304.550 and 3456.550 MHz. All three have been licensed.

Also, a **Packet Radio** transmitter/receiver is planned for 1296.900 and 2304.900 MHz; voice repeater on 1281.475 transmit and 1293.475 receive.

In his "spare time" Mark is almost operational on 10 GHz after successfully arriving on 2304 MHz. Good home-brewing Mark....5LP.

10 GHz Records

John Martin VK3KWA FTAC Chairman, sends confirmation of the new national 10 GHz record which was set by **Roger Bowman VK5NY** and **Bill Pickering VK5ACY** on 22 April 1993 over a distance of 355.4 km. See November *Amateur Radio* for details of this contact. Congratulations.

On 24 April 1993, **Steve Hutcheon VK4ZSH** and **Neville Mills VK4KOP** set a new 10 GHz ATV record, working a distance of 144.3 km. Steve was portable in VK2, so this contact also means a new VK2 state record. Well done.

Beacon information

John VK3KWA refers to my comments regarding beacons in October AR, and says that VK7RSB on 50.057 is off air and could be replaced by a new beacon signing VK7RNW. This beacon will also operate on 144.474 and 432.474 and possibly 1296 MHz. VK7RNT is also QRT. The Gold Coast beacon is identified as VK4RGG, located at Nerang and using 50.058 MHz.

Apparently the beacon situation in Victoria is unchanged. The only operational beacons are VK3RAI on 432.450 and VK3RMB on 432.535 (nominal) — it is FSK and its mark and space frequencies fall between 432.536 and 432.537. Unfortunately, VK3RAI precludes some Melbourne operators from hearing VK5VF on its correct frequency of 432.450 MHz.

I am disturbed to learn that FM nets have appeared on 144.400, 144.525 and occasionally 144.475, all in the beacon segment, which is unfortunate as they can splash over on to legitimate beacon frequencies. Just one two metre beacon in Melbourne would be of immense value to operators in other states and maybe assist in clearing the beacon segment of other operators.

It seems strange to me that a large city like Melbourne, sitting at the cross-roads for VHF/UHF operation with contacts possible to VK1, VK2, VK5 and VK7 under reasonable conditions, has the least effective beacon set-up in the nation. I'm sorry Melburnians, but at times like these I cannot help but draw a comparison with **Geoff GJ4ICD** on tiny Jersey Island, who personally built quite a number of 50 MHz beacons and despatched them, gratis, to out-of-the-way places so that others could know when the band was open to those areas. (Latest information indicates Geoff is still making beacons!) So, I will be very happy to report when a two metre beacon in Melbourne is operating 24 hours a day on 144.430 MHz.

Bob Blinco VK6KRC has written regarding my AR request for an update on beacons. The Perth beacons are located at Bob's QTH of 30 Second Avenue, Cloverdale, for the time being, hopefully to be moved soon! Bob reports all beacons are independently on/off keyed and signing "VK6RPH Perth" followed by approximately 30 seconds of key-down period. Frequencies are 50.066, 144.460 and 432.460 all with a power of ten watts, 1296.460 at three watts, all are horizontally polarised. Thanks.

Ted Collins G4UPS advises new beacons as ES0SIX on 50.037 MHz, ES6SIX 50.011.3, ZS1SIX 50.080 and SV9SIX 50.010. Ted also reports, *On 9 August 1993 the antenna for the JA7ZMA beacon was changed from a 6-ele yagi to stacked horizontally polarised 5/8 wave turnstyles. The old antenna was beamed south so the omni-directional antenna will reduce the signal strength to VK and P29 etc — but the new antenna will give increased signals to all other directions.* JA7ZMA operates on 50.026 from QM07.

Geoff Brown GJ4ICD reports he has dispatched a new beacon for 9M6SMC and also the one for Z21SIX finally arrived. The next beacon to be made will be for 8R1SMC on 50.013. The FY7 beacon is still there on 50.039 FSK. TF3LB has rebuilt the Iceland beacon on 50.057. OD5SIX is also operating.

The 1993 Perseids

The only report I received came from **John VK3KWA,** who commissioned a new linear amplifier on the night of 11 August. Turning on the transceiver, he noticed a few very healthy pings at 1000 from VK4RBB, the Mount Mowbullan beacon on 144.400. He made several STD calls and in response arose at 1900 but he found conditions hopeless — about a dozen minor pings. He remarked, "We are obviously in the wrong hemisphere."

Emil Pocock W3EP of QST's *The World Above 50 MHz* has given considerable space to reporting the Perseids in his November pages. He said, *The 1993 Perseids meteor shower didn't live up to the expectations of many who predicted a great storm, but it still generated a great deal of activity. Experiences varied depending on location and on-the-air time. There were no tremendous surges, as in 1991 and 1992, yet many visual and radio summaries suggest there were definite peaks, as well as an unusual number of long-lived meteors.*

The following is a resume of Emil's writings: Peter Brown of the International Meteor Organisation said that on the basis of many visual reports from around the world, the period of highest activity appeared to be 12 August between 0030 and 0530, with average zenith hourly rates of 200 or more, with a spike of 500 meteors occurring around 0300 to 0330. This spike fell within the time frame of the great 1991 and 1992 surges, at 2000 on 11/8 to 0500 on 12/8, adjusted for 1993.

Meteor shower contacts are easy to make on 6 metres and virtually no VHFer gives 10 metres a thought. Gary Stone,

N5PHT in Texas, wrote about more than 100 contacts he made on 10 metres during a two-hour period early on the 12th.

The most popular band was two metres, the more active operators made a dozen or more contacts and completed two-thirds of their schedules. Ken KH2F/W3 worked 20 new grids in 15 hours operating from a portable site, all contacts in the 1900 km range. Carl KM1H made about two dozen contacts and noted some very long burns of two minutes or more on 11/8 at 1711 and 1724. Charlie Calhoun W0RRY (EM26) worked Ray N1GDP (FN55) at 2400 km and then made one other 2400-plus km contact to K6AAW (CN80), thus linking both coasts.

In the absence of any news to the contrary, it seems that VK was not well situated or operators were looking at the wrong time. Certainly the US results are very impressive. It seems meteor contacts on 432 MHz are difficult with short duration pings, nevertheless, on 14 July at 1114, (before Perseids), Larry WB5KYK worked NW3C but took 59 minutes to do so, using CW at about 50 wpm and single yagis and less than 200 watts.

EME activity

Doug VK3UM still manages to notch up some good scores from his EME efforts. During a contest on 9 and 10/10 he managed 34 QSOs sandwiched amongst work related call-outs due to thunderstorms. Due to his moon visibility at both ends he has two periods per day in which to work stations. Doug usually operates on 432.018 MHz.

On 9/10 from 0000 to 0050 he worked RA3YCR, SM4IVE and OH2PO. From 1614 to 1806 he worked VE3ONT (very strong signals 58N and 57N), K1FO, K4QIF, N4GJV, N2IQU, W7GBI, K0RZ, WD5AGO, N7ART, K2UYH, N9AB, W7CI, JA9BOH and JA6ZHR.

On 10/10 he commenced at 0027 by working DL9KR 56N during a hail storm, then to 0052 G4RGK, DJ6MB, F5FHI, DF3RU, F5HRY, EA3UM, DF6NA, and from 1652 to 1941 KD4LT, WA3FFC, WA6BJE, K5JL, K1RQG, K6VWM, JA2JRJ, KB8ZW, JA4BLC. The majority of signals were around strength 4 to 5.

Closure

With this issue I commence my 25th year as your scribe for these columns. Little did I believe I would still be here after being "dobbed" for the job by the VK5 Federal Councillor, Geoff Taylor VK5TY, at the 1969 WIA Annual Conference.

Thank you to all who have made contributions during that time and special thanks to the Editor and staff of *Amateur Radio* for their ability to survive my ramblings. Things are easier today with the use of a computer and the forwarding of a monthly floppy disk of news, but it still takes many hours of work to put together these columns.

The summer Es season is upon us and if the same pattern of contacts in our hemisphere follows those of the northern hemisphere, then we should not be short of contacts. Do please keep the international DX calling frequency of 50.110 clear for that rare contact — you can always monitor that frequency by placing the frequency into the memory of your transceiver while you work further up the band.

To all my readers, best wishes for Christmas and may the New Year bring you something special. Remember that the Ross Hull Contest commences early morning on 26 December.

Closing with two thoughts for the month:

1. Christmas is a time when you get homesick — even when you are home! and
2. The height of confidence is standing up in a hammock.

73 from The Voice by the Lake.

*PO Box 169 Meningie SA 5264

Over to You — Members' Opinions

All letters from members will be considered for publication, but must be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

VK0 — Who is There?

In the latest issue of the Call Book, 27 VK0 callsigns are listed. If any operator is looking for a contact with VK0, you will NOT find 27 operators down south.

Some problems must exist between the Spectrum Management Agency (SMA) data, licences actually issued and Call Book listings, let alone the fact(?) that there is only one operator down south. Or has been by the time this letter is published.

The list below has been compiled from my incomplete records and tries to show when the listed callsign was issued to the present holder:

VK0AE	1988	VK0CN	1992	VK0LH	1990
VK0AP	1990	VK0DG	1993	VK0NE	1988
VK0AQ	1986	VK0DI	1993	VK0TW	1988
VK0AT	1990	VK0DS	1991	VK0DIK	1991
VK0AW	1991	VK0DY	1990	VK0KZA	1990
VK0BH	1991	VK0FY	1988	VK0NUT	1993
VK0CC	1986	VK0GC	1988	VK0SKS/KSK	1992
VK0CE	1986	VK0JR	1991	VK0YIP	1991
VK0CH	1991	VK0KH	1986	VK0ZCM	1992

If any reader can give me more information, I would be very pleased to hear from them.

Neil Penfold VK6NE
QSL Manager VK9/VK0
2 Moss Court
Kingsley WA 6026

Old Timers' Recollections

Just thought you would like to know that I'm very happy with the delivery times of *Amateur Radio.* It turns up generally the first week of the month here at Cairns in far north Queensland.

I would like to read more old timers' stuff and stories, such as old time valves, the start of broadcasting, etc.

Can you pay a bloke to go around and personally quiz the old timers? Don't do it now and that information is gone forever. I suggest people like VK3SY (3GL), VK3SW (radar), VK3AJF (PAs, army) and VK3ALG (early days).

Paul Gregory VK4YFF
1/124 Sheridan St
Cairns QLD 4870

(No, we can't pay, Paul, but perhaps someone from Geelong, such as the four you named, might like to volunteer. Any offers? Ed)

Praise for Gold Coast

The FM channels have produced hundreds of nets all around the country.

One, VK4RGC on the Gold Coast, must surely rank as one of the most friendly, efficient and helpful of them all.

Operating on 146.7 MHz it has a tremendous range because it is on a high mountain some distance from the Pacific Ocean.

Each morning at 0800 hours precisely the operator on duty for the morning welcomes those on frequency. The first few minutes provide amateur radio news, particularly Gold Coast Amateur Radio Society activities such as a BBQ for members and visitors. National WIA items also feature. In many ways it is a daily version of the WIA Sunday broadcasts throughout the country.

After about five minutes' news the operator calls in those wishing to "talk" or "listen". All calls are acknowledged, and "talkers" called in.

An amazing variety of information comes from the callers. Their requests regarding holiday travel, entertainment, etc are answered very professionally and politely. Being a thriving holiday centre there are always many itinerant radio amateurs in the Gold Coast area.

I first heard of the net from a VK4 I worked before visiting the area a few

weeks ago. The VK4 suggested I take my handheld. Operating from the eighth floor of a high rise on the ocean edge I apparently put a hefty signal into the repeater. From Byron Bay, well south of the Gold Coast, I also had no trouble triggering this repeater.

For those thinking of retiring to this Shangrila of the South Pacific reports indicated the councils were "amateur-radio-friendly".

For more details on this very functional repeater contact Ken VK4KD, one of the people behind this unique operation.

Roth Jones VK3BG
23 Cherry Tree Grove
Croydon VIC 3136

Morse Again — NZ Survey

In the July 1993 issue of the NZART publication *Break In,* a membership survey on Morse was published. Below is the result of 942 returns from members. While not wishing to start, or prolong the existing "Morse or no Morse" discussions, here are some views from New Zealand.

1. NZART supports the continuation of Morse as an entry test for full amateur privileges — 62%.
2. Competency in Morse code for full privileges — 76%.
3. Other tests should be available to parallel Morse — a mixture of results — essential 8%; desirable 17%; acceptable 14%; perhaps 30%; unacceptable 24%.
4. If the general licence (our AOCP) is to continue to require Morse code proficiency the minimum standard should be — 15 WPM 5%; 12 WPM 57%; 10 WPM 20%; 6 WPM 11%.
5. The NZART should seek abandonment of the CW test — now 12%; when possible 25%; never 54%.
6. Should NZART have an HF no-code licence if this means isolating ourselves from world standards — perhaps 15%; never 64%.
7. Morse is an important mode that should be encouraged, even if this is not needed to obtain a licence — definitely 76%; neutral 17%.

Some minor percentages have been omitted where they do not affect the result.

Neil Penfold VK6NE
2 Moss Court
Kingsley WA 6026

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Support the advertisers who support Amateur Radio magazine.

Pounding Brass

*Stephen P Smith VK2SPS**

Congratulations to VK2JSB in winning the novice CW section of the WIA 1993 Novice Contest, and to VK3EFO for taking out the AOCP CW section. A job well done by both. It's a little disappointing that this year's contest only drew in 34 entrants. Hopefully we can improve on this figure next year.

I would like to thank Mr Bird (VK3EDB), for the article from the Melbourne Sun Herald, dated 14 Sep 93, about a gentleman who was physically disabled, unable to speak and who, after eight years of frustrating silence, was able to speak with his "new voice — an electronic device he programs to speak for him by using Morse code which he transmits into a computer which translates the code into the spoken word. Sir, I take my hat off to you.

In this issue we will look at how the telegraph came to Australia, and what significant changes it made. It is interesting to note that, prior to this, Australia had a form of communication called "Semaphore". The Semaphore formed a visual telegraph that conveyed messages alphabetically by positioning of its two arms. The town of Semaphore, nine miles from Adelaide, is a contemporary reminder of its use. The drawbacks to this optical telegraph were rain, fog, mist and snow. It was labour intensive and totally ineffective at night.

It was nearly eight years after Morse tapped out his famous "What Hath God Wrought" that the telegraph came to Australia. A Canadian named Samuel McGowan (1829 — 1887), aged 24 at the time, brought telegraph technology to the colonies. McGowan, already an expert telegraphist and entrepreneur in the expanding North American telegraph industry, started his telegraph career in 1847 while studying under Samuel Morse.

When news of Victoria's gold discoveries reached North America in 1852, McGowan saw his opportunity, consulted his former instructor Professor Morse and embarked for the colonies of Australia.

In 1853 McGowan arrived in Melbourne, along with a first class electrician, several complete Morse sets, insulators, batteries and cable. This was the first transfer of modern telecommunications technology to Australia.

McGowan's plan was to develop a private company to construct and work telegraph lines from Melbourne to the Ballarat and Bendigo gold fields, and to link Victoria's golden capital with those of its neighbouring colonies.

As his company took shape, the Victorian Government stepped in and called for tenders for the construction of an experimental telegraph line, running from Melbourne to Williamstown, and indicated to McGowan that any independent approach would meet the utmost resistance. Confronted by bureaucratic red tape McGowan conceded to the Government, taking a leading position in the management of Public Telegraphy and also the contract for the eleven mile Melbourne — Williamstown telegraph line.

Australia's first telegraph line was completed with home made wooden poles and imported British galvanised wire.

On 3 March 1854 the first telegraph line in Australia opened. McGowan became General Superintendent of the new electric telegraph of Victoria. Nearly four thousand telegrams were despatched in the first year of operation. Two years later the figure had tripled, bringing in some five thousand pounds to Victoria's Electric Telegraph Company. Rates for telegrams at the time were set at 1 shilling and 6 pence (1s 6d) for the first ten words any distance under ten miles and increased for each ten miles.

Victoria was at the forefront of technology at the time, and other colonies became interested in Victoria's telegraph system. South Australia was the next colony to follow. Charles Todd (1826-1910) was made the first Superintendent of Telegraph, accepting office in February 1855, and arriving in Adelaide in November 1855 from Britain.

On the same day as Todd's arrival, a private contractor, James McGeorge, opened a line from Adelaide to its port, using his own equipment. Meanwhile Todd completed his telegraph line from Adelaide to Semaphore, which opened two months later in 1856. James McGeorge's earlier line was bought by the South Australian Government for eighty pounds and dismantled. The Adelaide — Melbourne telegraph line started in April 1857 and opened July 1858. (To be continued)

I would like to thank Peter Dance from the Telecom Historical Society for supplying the above information.

Overseas News

Chris G4BUE has become the first UK amateur to complete the 5 Band Worked all Zone Award, exclusively on CW. Congratulations Chris on a tremendous effort.

Merry Christmas to all — see you in January 1994.

PO Box 361 Mona Vale NSW 2103* **ar

Silent Keys

Due to space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:-

E W (Eric)	CLEBURNE	VK2BII
D A	MCKINNON	VK2CDM
H (Hans)	SCHWITTER	VK2GKO
R K (Rex)	ROSEBLADE	VK2RR
C RUSSELL	WATT	VK2WT
E C (Edwin)	MANIFOLD	VK3EM
T	JENSEN	VK4NTJ

Ray Bennett VK5BT

On October 13, VK5BT lost to cancer and became a silent key. Our friendship began one morning in August 1991. That is not very long for a "ham radio friendship" but, for VK5BT and I, it was the beginning of a real relationship — a true "mate" as you-down under fellows would say. That first contact was very rough, with my 80 watt Atlas transceiver and a dipole antenna up 20 feet, but I did manage to hear that Ray had a daughter coming to Texas, so we set up a schedule for the next day, and the next, and the next, etc. (VK5BT's daughter and friend (Gayle and Marty) did find their way to Texas and we got to spend one weekend together.) We decided, in the words of Ray, to "persevere and the conditions would get better." Well, they did get better and I did have many, many more contacts over the next few years.

Ray and I became mates — in every sense of the word (at least as much as a Yank could understand the word). We shared about life. And that is what ham radio is all about for me. I go just as "psychotic" as the next DX hound when a new country shows up, but the real satisfaction in ham radio comes from getting to know the fellow on the other end. VK5BT and I finally settled on an every other day sked and eventually a weekly sked. For much of that time Lloyd (VK5TP — now a silent key) was with us and ZL1BJN (Capt'n Bill) and VK5PC (Denis) joined in.

This is to say goodbye to a mate — and to say that ham radio made his life fuller and more complete. He will be missed by people all over the world — and by a very loving and large family.

Ray began his "radio career" back in WWII. Ray was a radio operator and he served with the "Z Special Forces." Ray was very proud to have served his country and his military time and friendships developed were special to him.

I will miss Ray and so will many hams around the world. I was probably not the best person to write this note — but Ray was a good mate and I wanted to say goodbye.

Gary Stone N5PHT,
POB 305, Savoy, TEXAS 75479

Rex Roseblade VK2RR (formerly VK1QJ Canberra)

Rex was a retired Army Signals Brigadier of the 7th Division. He was involved in the Middle East, PNG, Japan and was a graduate from, and later an instructor at, Duntroon.

During a visit to Sydney in 1986 he lost a leg following an accident with a motorcyclist whilst crossing the Pacific Highway. Since then he has been in various hospitals and finally the War Veterans Nursing Home at Narrabeen. During this period he has been heard on HF and latterly the Terry Hills 2 m repeater.

Rex died on Friday morning the 8th October after a long illness. He leaves his wife Mary, and son Michael and family. Rex was aged 78 years.

Arthur Brown VK2IK

E C (Ed) Manifold VK3EM

Edwin Charles Manifold became a silent key on 1st November 1993. He was born on 31/1/08 and by the time he was 14 was taking an active interest in the mysteries of wireless. By August 1930 he had obtained his amateur licence, the call sign of VK3EM and was active until the outbreak of war.

After three attempts Ed was able to obtain release from his reserved occupation with what was then the Metropolitan Gas Co and get into the Wireless Maintenance Mechanics course No 21 at the Exhibition Building in Melbourne. On completion of the course he found himself in a number of locations, not the least of which was Darwin in time for the bombing raids. He recently expressed to me his regrets at being unable to go to Darwin for the 50th anniversary reunion of those who had been there at the time.

After the war Ed lost no time getting back "on air", his "new" licence being issued on 24/1/46 permitting operation on 28-29, 50-54, 166-170 and 1345-1425 "megacycles".

Ed was a foundation member of the Moorabbin and District Radio Club of which he was a life member. He was foundation treasurer in 1949 and retained the position during 1950 and 1951. He was elected president in 1955.

From June 1959 until December 1970, he was an active member of the WIA Publications committee, almost every circuit diagram used during this period was his work.

With the advent of the first 70 cm repeater in Melbourne, Ed found a new interest and whilst the rest of us were looking for commercial equipment to modify, Ed proceeded to produce a fine piece of homebrew gear, which now rests in the museum of the MDRC along with several other examples of his workmanship.

Ed was member No 23 of the RAOTC, but due to his failing health and the fact he had moved to a country location he let his membership lapse.

The world of amateur radio is the poorer for his passing.

Ken Pincott VK3AFJ ar

WICEN

News from WICEN (NSW) Inc

By now the Big NSW/VIC Bike Ride will be in full swing with WICEN personnel from both states providing safety communications for the many cyclists. The ride will finish on 12 December.

The Narrabeen Festival will be on the weekend of 4-5 December. Local co-ordinator Richard VK2SKY is arranging communications for this community event.

There are no more scheduled events for the year but, as usual, all personnel are warned to be ready for sudden activations. Disasters at this time of the year in the past include bush fires, storms and an earthquake. The holiday season also causes people to do silly and unpredictable things on the roads, so drive carefully. We'd like you to be around for next year.

Events notified for next year include the Worrigee Horse Trial on 13 March with David VK2BDJ in charge; and the now annual Goulburn Training Conference on the weekend of 14-15 May.

Finally, do not forget the Sydney 2000 Olympics! WICEN's involvement is unknown at this stage, but it will no doubt involve many personnel.

The address of WICEN (NSW) Inc is PO Box 123 St Leonards NSW 2065. WICEN (NSW) conducts nets at various times. The only one I know about is the Sydney VHF Net every Thursday night at 2130 local time on repeater 7150 in Chatswood.

Dave Horsfall VK2KFU
Publicity Officer WICEN (NSW) Inc.
ar

WIA News

October Board and Council Meeting

The WIA Federal Office hosted the October quarterly meeting of the Federal Board and Council over the weekend of the 16th and 17th. There was an informal meeting of the seven Councillors and attending alternates for one hour on the Saturday morning to plan the order of business and discuss particular items of interest.

The formal meeting opened at 1000 on Saturday and closed at 1500 on the Sunday. The Council considered a motion from VK3 which sought to change the way concessional membership fees are determined. Up till now, they were determined by applying a fixed discount of 20%, "split proportionally between the Executive and Divisional components."

The motion was carried; the intention and effect being that Divisions are no longer limited by a 1989 resolution, and 1992 amendment, in the way they determine concessional membership fees. This was the only business considered by Council.

The Board heard reports from Councillors, the new Federal Secretary, Bruce Thorne, and Federal Office manager, Donna Reilly, and the Federal International Regulatory coordinator, David Wardlaw VK3ADW. David was authorised by the Board to attend a Seminar on "Access to the Spectrum and the New Radiocommunications Act" on 1 November. No doubt we'll have a report on this in the fullness of time.

David also gave an extensive verbal report to the Board on numerous happenings on the **international amateur radio scene.** It is planned to have a summary of important items in January's WIA News.

Federal WICEN Coordinator, Leigh Baker VK3TP, advised Federal that he would continue in his position for another year. His decision was appreciated by the Board and the Federal Secretary has written to thank him.

Awards, contests and the issuing of certificates came up for discussion on the Board meeting's agenda. The Board resolved that the Contest Manager will in future sign contest certificates, but that all other coordination arrangements will remain unchanged.

The Federal Office provides support to the coordinators, Peter Nesbit VK3APN and John Kelleher VK3DP, sending certificates out to recipients and publishes results in *Amateur Radio magazine.* A congratulatory letter is sent to contestants, providing an avenue to promote the WIA to those who are not members and showing support to those who are. The procedures ensure a professional and reliable service to the Divisions, the members and amateurs in general.

Amateur Radio magazine, a topic under discussion at Federal quarterly meetings for over a year now, was discussed at length. Forward business from the July quarterly meeting included the questions of restaffing and an "editorial platform". The Board appointed a subcommittee to consider publishing options and policy for the magazine. Neil Penfold VK6NE was appointed Chairman, with Bill Wardrop VK5AWM and Roger Harrison VK2ZTB as members.

The subcommittee's terms of reference are:

1. To investigate existing magazine production procedures, compare and contrast with current publishing industry practices and make recommendations to the Board on future operations;
2. To investigate existing policies and procedures regarding selection and rejection of all editorial material, compare and contrast with current publishing industry practices and with current practices of like organisations and make recommendations to the Board on future policies and procedures; and
3. To develop and recommend to the Board an editorial platform for *Amateur Radio* magazine, to serve the interests of the WIA and its members.

A first report is to be produced by the subcommittee for circulation by 1 February 1994.

Roger Harrison VK2ZTB subsequently attended a Publications Committee meeting convened for 26 October to discuss the matters raised in the Board subcommittee's terms of reference. The Publications Committee detailed current practices and policies and provided considerable information for the subcommittee to consider.

Under **General Business,** the Board decided that the Spectrum Management Agency (SMA) should be approached to consider longer licence renewal periods, of perhaps three to five years, rather than the annual renewal, as presently applies. In addition, the SMA is to be asked to consider licence payments and renewals by credit card (ie phone up and "pledge your plastic" at renewal time), and to organise payments through agencies, such as Post Offices.

There was also discussion on recent problems with the content of packet radio messages.

Support the WIA in order to protect Amateur Radio frequencies.

HF PREDICTIONS

Evan Jarman VK3ANI

The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for the five bands from 14 to 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1 μV (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 μV in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50 μV at the receiver's input and the S-meter scale is 6 dB per S-point.

μV in 50 ohms	S-points	dB(μV)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4
0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

VK EAST The major part of NSW and Queensland.

VK SOUTH Southern-NSW, VK3, VK5 and VK7.

VK WEST The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 41.2. The predicted value for January is 39.1 and for February it is 37.3

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VK EAST — MEDITERRANEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.0	-7	6.9	0	-12	-27	...	...
2	8.6	-16	6.6	-1	-12	-26	...	...
3	12.0	-5	9.3	0	-2	-10	-23	...
4	18.7	4	14.4	-2	4	3	-2	-10
5	25.5	7	19.5	-6	6	9	8	4
6	26.9	9	20.9	-8	6	10	10	8
7	26.3	10	21.2	-7	7	11	11	9
8	25.9	11	21.1	-4	8	12	12	9
9	25.3	12	21.0	1	12	14	13	9
10	24.5	15	19.8	11	17	18	15	10
11	23.8	18	19.1	21	23	21	16	10
12	23.1	21	18.5	30	28	24	18	10
13	22.7	24	18.1	37	32	27	19	10
14	22.2	25	17.5	39	33	27	18	9
15	21.4	24	17.0	39	31	24	14	4
16	19.6	23	14.7	37	27	18	6	-7
17	17.8	24	13.3	34	23	13	-1	-16
18	16.6	25	12.4	32	20	9	-6	-24
19	15.7	26	11.6	31	17	5	-11	-30
20	14.6	27	10.8	28	14	0	-18	-39
21	13.6	25	10.0	23	8	-5	-25	..
22	12.7	21	9.8	17	5	-8	-28	.
23	12 8	15	9.6	13	3	-9	-27	.
24	11.3	7	8.6	6	-3	-16	-36	.

VK EAST — SOUTH PACIFIC

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28 5
1	27.5	28	22.8	35	37	35	31	26
2	28.3	28	23.4	36	37	36	32	28
3	28.5	28	23.4	37	38	36	33	28
4	28.1	29	23.0	38	39	37	33	28
5	27.4	29	22.3	40	40	37	33	27
6	26.8	30	21.8	43	41	38	33	27
7	26.0	32	21.0	48	44	40	34	27
8	25.1	33	20.2	50	45	40	33	26
9	24.3	34	19.5	50	45	40	32	24
10	23.5	34	18.8	51	45	39	31	23
11	23.1	35	18.3	51	44	39	31	22
12	22.4	35	17.7	51	44	38	29	20
13	21.5	36	16.9	50	43	36	27	18
14	20.1	37	15.7	49	41	34	24	13
15	18.7	38	14.5	48	39	31	20	8
16	17.4	39	13.3	46	37	28	15	3
17	16 5	39	12.5	45	35	25	12	-1
18	17.0	38	12.9	44	35	26	14	1
19	19.3	34	14.5	41	36	29	20	9
20	22 2	31	16.9	39	37	33	26	17
21	24.3	30	18 8	38	37	34	29	22
22	24 8	29	19.5	36	36	34	29	22
23	25.3	29	20.3	35	36	34	29	23
24	26.2	28	21.4	35	36	34	30	24

VK EAST — AFRICA

UTC	MUF	dBU	FOT	14 2	18.1	21.2	24.9	28 5
1	16.1	11	11.2	10	10	5	-4	-15
2	15 3	7	11.7	6	7	2	-6	-18
3	15 7	4	11.9	2	5	2	-5	-16
4	17.8	5	13.4	-1	5	4	0	-8
5	19.7	6	13.8	-4	5	6	2	-3
6	19 5	5	13.7	-5	4	5	2	-4
7	19 5	5	13.7	-5	4	5	2	-4
8	19.4	6	13.6	-4	5	5	2	-4
9	19.4	7	13 5	-1	6	6	2	-4
10	19 2	9	13.4	3	9	8	3	-4
11	19.2	11	13.4	8	12	10	4	-4
12	18.5	13	13.6	12	14	10	3	-5
13	17 9	16	13.4	17	16	11	2	-8
14	17 3	19	13.0	22	18	12	2	-10
15	16.7	24	12 5	28	20	12	0	-13
16	15.8	27	12 0	30	20	11	-3	-18
17	15 0	28	11.5	30	19	8	-7	-24
18	14 5	29	11.0	30	18	6	-10	-28
19	14.4	30	10 6	31	18	6	-11	-29
20	14.9	29	10 2	31	19	8	-8	-25
21	14.3	25	9.8	25	15	4	-11	-29
22	13.9	21	9 6	20	12	1	-13	-31
23	14.0	16	9 7	16	10	1	-13	-29
24	14 6	13	10 2	13	9	2	-9	-23

VK EAST — EUROPE

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28 5
1	9.7	-3	7.6	1	-10	-24	...	...
2	8.7	-12	6.8	0	-12	-26	...	...
3	8.2	-18	6.5	-1	-12	-26	...	..
4	9.4	-14	7.2	0	-7	-19	-37	..
5	12 3	5	9.8	0	-1	-8	-21	-37
6	16.4	2	13.1	-1	3	0	-7	-18
7	19.9	6	16.0	-1	6	6	1	-6
8	22.7	9	18.3	2	10	10	6	0
9	24.4	12	19.8	9	15	15	11	5
10	24 1	17	19.4	22	23	21	16	9
11	23.3	21	18.7	31	28	24	17	9
12	22.7	22	18.1	35	30	25	17	7
13	21.9	21	17.4	37	30	23	13	1
14	19.0	23	15.2	35	25	16	3	-11
15	16 0	25	12.7	31	17	5	-12	-31
16	13.1	27	10.7	23	5	-11	-34	.
17	11.2	28	8.8	15	-7	-29	..	..
18	9.8	29	7.7	6	-20	.	..	..
19	9.2	30	7.2	2	-27	.	..	.
20	8.9	30	6.9	0	-31	.	.	.
21	8.8	24	6.8	0	-29	..	.	.
22	9.1	16	7 2	1	-22	.	.	.
23	9.7	8	7.5	3	-14	-32	...	.
24	10.1	3	7.9	3	-10	-25	...	.

VK EAST — USA/CARIBBEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	17.4	5	13.1	1	4	2	-5	-16
2	15.2	5	11.5	4	3	-2	-13	-27
3	13.7	6	10.3	6	2	-6	-21	-38
4	12.9	9	9.7	9	1	-10	-27	.
5	12.3	14	9.2	11	0	-14	-34	
6	11.8	19	8.8	13	-2	-19	.	. .
7	11.5	25	8.7	15	-4	-23	.	.
8	11.7	27	8.8	17	-2	-21	. .	.
9	11.8	28	8.9	18	-2	-21	..	.
10	10.9	29	8.3	14	-9	-30	...	.
11	9.3	31	7.1	4	24	.	...	.
12	8.8	31	6.8	0	-30	..	..	.
13	11.1	29	8.3	15	-6	-28	...	.
14	11.8	29	9.1	19	0	-18	.	.
15	11.6	24	9.0	15	-2	-19	.	.
16	15.8	18	12.0	20	13	4	-10	-26
17	16.1	14	12.3	14	12	6	-3	-16
18	16.6	10	12.6	7	9	5	-2	-13
19	18.8	8	14.2	0	7	7	2	-5
20	21.7	8	16.6	-4	6	8	6	1
21	23.7	7	18.4	-7	5	8	7	3
22	24 2	7	19.1	-8	5	8	7	3
23	23 2	6	17.6	-7	4	6	4	-1
24	20 4	5	15.4	-3	5	5	0	-7

VK EAST — ASIA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24 9	28.5
1	26.1	15	21.1	17	21	21	17	11
2	26.6	15	21.2	15	21	21	17	12
3	27.9	14	22.0	15	21	21	18	13
4	28.9	13	22.1	16	22	22	19	14
5	29.5	14	22.8	18	24	23	21	16
6	28.5	17	23.4	21	26	25	22	17
7	27.5	18	22.4	25	28	26	22	16
8	26.5	19	22.1	32	31	28	22	15
9	25.6	21	20.7	39	35	30	23	15
10	24.7	22	19 9	41	36	30	22	13
11	24.1	23	19.3	42	36	30	21	12
12	24.0	21	18.5	42	35	28	19	8
13	22.6	21	17.2	42	33	25	14	2
14	20.6	22	15.6	40	29	20	7	-6
15	18.8	23	14.4	37	25	14	0	-17
16	17.6	23	13.3	34	21	9	-7	-26
17	16.4	24	12 5	32	17	3	-15	-36
18	14.4	25	11.0	26	8	-9	-33	
19	11 6	27	8.9	13	-13	-37		.
20	11.4	26	8.9	11	-14	-39	..	.
21	15.8	20	12.0	24	12	-1	-19	.
22	22.9	16	17.7	28	25	20	12	2
23	24.5	17	19.5	23	24	22	16	9
24	24.9	16	20 1	19	22	21	16	9

VK EAST — EUROPE (Long Path)

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28 5
1	9.4	-11	7.1	0	-6	-17	-35	.
2	10.0	-4	7.6	2	-6	-17	-34	...
3	10 4	0	8 0	3	-5	-16	-34	...
4	10.0	3	7.7	4	-7	-20	..	.
5	9.0	6	7.0	2	-13	-31	..	.
6	8.5	10	6.7	1	-18	-39	. .	.
7	9.7	23	7 7	8	-12	-32	..	.
8	12.8	24	10.2	20	5	-9	-29	.
9	14.3	25	10.9	25	15	4	-11	-28
10	14.5	17	11.0	18	11	3	-9	-23
11	17.5	11	13.8	10	11	8	1	-8
12	18.3	7	14.5	1	7	7	2	-4
13	17.6	3	14.2	-5	3	4	0	-6
14	16.6	-1	12.9	-9	0	1	-2	-8
15	15 7	-6	12.1	-11	-1	0	-4	-10
16	15.1	-8	11.5	-12	-2	-1	-5	-12
17	14.9	-9	11 2	-12	-2	-1	-5	-12
18	15.6	-6	11.6	-12	-2	-1	-5	-13
19	13 6	-10	10.6	-8	-2	-4	-10	-20
20	11 6	-16	9 0	-5	-2	-6	-15	-27
21	10.1	-20	7 8	-2	-3	-9	-21	-36
22	9.5	-21	7.3	-1	-4	-12	-25	.
23	9.1	-20	7.0	0	-5	-14	-30	.
24	9 1	-16	6.9	0	-6	-17	-33	. .

VK SOUTH — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24 9	28.5
1	16.5	15	11.8	16	13	7	-2	-14
2	17.0	13	12 8	12	12	7	-1	-12
3	19.4	12	14.1	9	12	10	4	-4
4	19.5	10	14 0	4	10	9	4	-3
5	19.4	8	13.9	1	8	7	3	-3
6	19.4	7	13.8	0	7	7	3	-3
7	19 3	7	13.7	-1	6	6	2	-4
8	19 4	7	13.8	0	7	7	3	-4
9	19.8	9	14.1	1	8	8	4	-2
10	19.6	10	13.9	4	10	9	4	-2
11	19.2	12	13.6	8	12	10	4	-3
12	18.5	14	13.0	13	14	11	3	-5
13	17.8	16	12.4	17	16	11	2	-8
14	17.0	19	11.8	21	17	11	1	-11
15	16.6	23	11.5	27	20	12	0	-13
16	15.9	26	11.0	30	21	11	-2	-18
17	15.3	28	10 6	31	20	9	-5	-22
18	14.8	29	10.3	31	19	7	-8	-26
19	14.6	30	10 3	31	18	6	-9	-27
20	14.9	30	10 6	32	20	8	-7	-25
21	15 2	27	10 5	29	19	8	-6	-23
22	14.9	24	10 4	25	16	6	-8	-24
23	15 0	21	10 5	22	14	5	-7	-23
24	15 7	18	11 1	19	14	7	-4	-18

VK — SOUTH — ASIA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28 5
1	20.5	13	16.4	12	15	13	6	-1
2	20.8	13	16.9	10	14	12	7	-1
3	21.3	13	17.6	10	14	13	8	0
4	21.4	13	17.7	10	15	13	8	1
5	21.4	14	17.6	11	16	14	9	1
6	21.2	15	17.3	14	17	14	9	1
7	20.9	16	17.0	17	19	15	9	0
8	20.8	18	16.9	23	22	18	10	0
9	20 5	23	16.6	34	28	21	12	0
10	20.0	25	16.1	37	29	21	10	-1
11	19.4	25	15.6	38	29	20	9	-4
12	18.8	26	15.0	38	28	19	6	-7
13	18.2	26	14.5	37	27	17	3	-12
14	17.7	23	13.7	34	22	10	-6	-24
15	16.5	22	12.6	30	16	2	-17	-38
16	15.4	23	11.7	28	11	-4	-26	...
17	14.5	23	11.1	24	6	-11	-35	..
18	12.7	24	9.8	17	-6	-28	. .	...
19	10.2	25	7.9	0	-33	.	..	...
20	10.1	25	7.8	-2	-36	...	...	.
21	14.1	18	10.6	18	2	-14	-37	..
22	18.5	19	14.0	24	20	13	2	-10
23	19.9	16	15.4	18	18	14	6	-3
24	20.3	14	16.0	14	16	13	6	-2

VK SOUTH — USA/CARIBBEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28 5
1	19.1	5	14.4	0	5	4	-1	-9
2	16 6	6	12.6	4	5	1	-7	-19
3	15.1	7	11 4	7	5	-1	-13	-28
4	14.2	10	10 7	10	5	-4	-18	-35
5	13.5	14	10.2	13	4	-7	-24	..
6	12.8	18	9.6	15	2	-11	-31	...
7	12 3	22	9.4	17	1	-15	-37	. .
8	12 4	25	9.3	19	1	-15	-39	.
9	12.3	27	9 3	20	1	-16	. .	.
10	11.1	29	8.5	15	-6	-27	.	...
11	9.2	31	7.1	4	-24	...	.	...
12	8 7	31	6.7	0	-30	...	.	...
13	11 5	29	8.6	17	-3	-23	..	...
14	13.4	29	10.3	26	10	-4	-24	..
15	13.6	23	10.4	22	9	-3	-21	..
16	16.0	18	12.2	20	15	8	-2	-16
17	15.7	11	11.8	11	10	5	-4	-16
18	16.4	7	12.3	4	7	4	-2	-12
19	18 4	6	14.5	-2	6	6	1	-5
20	20 7	7	15.5	-6	5	7	5	0
21	22.3	7	17.0	-9	4	7	6	2
22	22.9	7	17.8	-10	3	7	7	3
23	23.2	7	18.4	-9	4	7	6	2
24	22 0	6	16.7	-4	5	6	3	-2

VK WEST — EUROPE (Long Path)

UTC	MUF	dBU	FOT	14 2	18.1	21.2	24.9	28.5
1	8.6	-36	6.6	-10	-16	-27	...	...
2	9 2	-18	7.1	-2	-9	-19	-35	...
3	9 4	-13	7 3	-2	-9	-20	-38	...
4	9.0	-12	7.0	-2	-12	-25	.	...
5	7 9	-12	6.2	-4	-18	-34	..	...
6	7 5	-10	5 9	-6	-24	.	...	...
7	8.2	0	6.5	-4	-22	...	..	...
8	10.5	10	8.3	4	-10	26	...	...
9	13.8	15	11.1	14	4	-7	-24	..
10	13.3	17	10.3	16	5	-6	-23	...
11	11.3	16	8.7	10	-4	-18	-39	...
12	11.4	9	8.8	7	-3	-15	-34	.
13	15.3	6	11.7	6	4	-1	-11	-23
14	16.7	3	11 4	-1	4	2	-3	-11
15	16.0	-2	11 1	7	0	0	-5	-13
16	15.3	-7	10.4	-11	2	2	-7	-14
17	14.6	-11	10.0	-12	-4	-4	-8	-16
18	14.2	-11	9.8	-11	-4	-6	-12	-21
19	11.8	-18	9.3	-8	-5	-8	-17	-29
20	9.9	..	7.8	-21	-19	-26	-39	...
21	8.6	..	6.8	-32	-34	. .	. .	. .
22	8.2	.	6 4	-34	-38	.	.	. .
23	8.0	.	6.2	-30	-36	.	.	.
24	8.2	..	6.3	-22	-28	...	.	..

VK SOUTH — EUROPE (Long Path)

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	8.9	-13	6.8	0	-9	-21	...	...
2	9.5	-7	7.3	0	-9	-21	..	...
3	9 8	-1	7.5	1	-9	-23	..	...
4	9.4	1	7 3	1	-12	-28	...	.
5	8.3	3	6.5	-2	-21	.	. .	.
6	7.8	8	6 2	-5	-29	..	. .	.
7	8 7	16	6.9	0	-23	..	...	...
8	11 2	22	8.9	12	-5	-24	...	...
9	14.1	24	10 9	24	11	-1	-18	-38
10	11.4	22	8.8	14	-1	-18	..	.
11	11.2	15	8.6	11	-2	-17	-38	.
12	15.3	12	11 7	12	8	2	-9	-23
13	16.2	7	11 5	5	8	5	-2	-11
14	15.5	1	10 7	-2	3	1	-4	-13
15	14.8	-4	10.3	-6	0	0	-6	-14
16	14 4	-8	10 1	-9	-1	-1	-6	-15
17	14 5	-9	10.3	-10	-1	-1	-6	-14
18	15.2	-6	10.8	-9	-2	-3	-8	-17
19	12.4	-13	9.8	-6	-2	-5	-14	-25
20	10.5	-32	8.2	-12	-11	-17	-29	...
21	9 1	..	7.1	-19	-21	-31	. .	...
22	8 6	.	6.7	-18	-23	-35	.	...
23	8.4	..	6.5	-13	-20	-32	..	.
24	8.5	-25	6.5	-4	-12	-24	..	...

VK WEST — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	15.3	19	11.7	21	14	5	-8	-23
2	15.7	16	11.9	17	12	5	-6	-20
3	17.8	14	14.0	13	13	9	0	-10
4	20.8	12	16.0	10	14	12	6	-1
5	21.0	11	15.5	6	12	11	7	0
6	20 9	10	17.2	4	11	10	6	0
7	20.8	10	17.1	3	10	10	5	-1
8	20 7	10	16.9	3	10	9	5	-1
9	20 5	10	16.7	4	10	10	5	-1
10	20.7	11	16.8	6	12	11	6	-1
11	20 5	12	16.9	9	13	12	6	-1
12	20.0	15	16.1	15	16	13	6	-2
13	19.4	17	15.5	20	19	14	6	-3
14	18.7	20	14.9	25	21	15	5	-6
15	18.0	24	14.3	31	24	16	4	-8
16	17.4	26	13.8	34	24	15	3	-11
17	16 8	27	13.6	34	24	14	0	-15
18	15.9	29	12.4	33	22	11	-3	-20
19	15.1	30	11.7	33	20	8	-8	-26
20	14.6	30	11.2	31	18	6	-11	30
21	14.5	30	11.0	31	18	5	-12	-31
22	15.2	30	11.4	33	20	8	-8	-25
23	15.3	27	11.7	30	19	8	-7	-24
24	14.9	24	11.3	25	16	5	-9	-26

VK WEST — MEDITERRANEAN

UTC	MUF	dBU	FOT	14.2	18.1	21 2	24.9	28.5
1	8.3	5	6.4	-6	-30	.	. .	..
2	7.9	-6	6.1	-7	-28	...	...	...
3	11.2	0	8 3	1	-7	-20	...	. .
4	17.6	6	13.6	5	6	2	-7	-18
5	22.8	9	17.1	2	10	10	7	1
6	23 2	8	17.8	-1	8	9	7	1
7	23.3	9	18.7	-2	8	10	7	3
8	23.1	9	18.8	-2	8	10	8	3
9	22.7	10	18.5	0	9	10	8	3
10	22.6	11	18 3	3	11	12	9	3
11	22.2	13	18 4	9	15	14	10	3
12	21 6	16	17.4	19	20	17	11	3
13	21 0	21	16.9	30	26	21	12	3
14	20.4	24	16.3	35	28	22	12	1
15	19.9	23	15.8	36	28	20	9	-3
16	18.7	21	14.1	34	23	13	0	-16
17	17 0	23	12.8	32	19	7	-8	-26
18	15 9	24	11.9	30	16	3	-15	-35
19	15 1	25	11.2	28	12	-1	-21	. .
20	14 0	25	10.4	25	8	-8	-29	...
21	13.0	26	9.8	21	2	-15	-39	...
22	12.5	27	9.4	20	0	-18	.	...
23	12 0	24	9.1	16	-3	-22	.	...
24	10.6	18	8.0	7	-13	-33	.	...

VK SOUTH — MEDITERRANEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.0	-4	6.9	0	-15	-31	. .	...
2	8.5	-14	6.6	-2	-14	-30	.	...
3	12.4	-3	9 2	0	-2	-10	-23	...
4	19.7	5	15 2	1	5	5	0	-7
5	22.7	9	18 7	-6	6	9	8	4
6	22.6	8	18 5	-8	4	8	7	3
7	22.4	7	18.3	-9	4	7	6	3
8	22.3	8	18.1	-7	5	8	7	3
9	22 5	9	18.2	-4	7	9	8	4
10	22 2	11	18 0	1	10	12	9	4
11	21.7	14	17 5	11	16	15	11	4
12	21.0	18	16 9	21	21	18	12	4
13	20.3	23	16 2	31	27	21	13	3
14	19.6	25	15.5	35	28	21	12	0
15	19.0	26	15.0	36	28	21	10	-1
16	18.2	27	14.4	36	28	19	8	-5
17	17.3	28	13.5	36	26	17	4	-10
18	16.4	29	12 7	34	24	13	0	-16
19	15.8	28	12.1	33	21	10	-5	-22
20	15.6	26	11.7	30	17	5	-12	-31
21	14.5	25	11.0	27	12	-1	-20	.
22	14.0	22	10.4	21	8	-4	-23	..
23	13.3	18	10.0	16	5	-8	-26	.
24	11.6	10	8.8	8	-3	-17	-37	.

VK WEST — ASIA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24 9	28 5
1	23.8	16	18.9	19	22	20	14	7
2	24.1	16	19.5	17	20	19	14	8
3	25.1	15	20.5	16	20	20	16	10
4	26 5	15	20 2	16	21	21	17	12
5	27.6	15	21 4	16	22	22	19	13
6	27.9	16	22.1	18	24	23	20	15
7	27.6	17	22.7	21	25	25	21	16
8	26.9	18	22.0	25	27	26	21	15
9	26 2	20	21.3	33	32	28	22	15
10	25.3	22	21.1	41	36	31	23	15
11	24 6	23	19.8	43	37	31	22	13
12	23.8	24	19 1	43	36	30	21	11
13	23.2	24	18 4	43	36	29	19	9
14	22 5	21	17.1	42	33	25	14	2
15	20 4	22	15.5	39	29	19	6	-7
16	18.7	22	14.1	36	24	13	-2	-19
17	17.4	23	13 2	34	20	7	-10	-29
18	16.2	23	12.4	31	15	1	-19	..
19	14 3	24	11.0	24	5	-13	-38	...
20	11 6	25	8.9	10	-17	.	..	.
21	11.4	25	8 8	9	-19	.	.	
22	15 7	21	12 2	26	12	-2	-22	.
23	21.7	18	16 7	27	24	19	11	1
24	23.6	17	18.4	23	24	21	15	7

VK WEST — SOUTH PACIFIC

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	22 4	15	17.8	13	18	16	11	4
2	22.4	15	18.2	13	17	16	11	4
3	22.7	15	16 8	14	18	17	12	5
4	22.7	16	18.6	15	19	17	12	5
5	22.5	16	18 5	18	20	18	13	5
6	22 4	18	18 3	21	22	19	13	5
7	22 2	20	18 1	27	25	21	14	6
8	22.4	22	18 2	32	29	24	16	7
9	22.2	24	18 2	37	32	26	17	7
10	21.6	25	17 4	40	33	26	17	6
11	21.0	26	16.8	41	33	25	15	4
12	20.2	27	16 1	41	32	24	13	2
13	19.5	28	15.5	41	31	23	11	-1
14	18.9	28	14.9	40	30	21	9	-3
15	18.1	29	14 1	39	29	19	6	-7
16	16.9	30	13.0	37	26	16	1	-14
17	16.1	30	12.2	36	24	13	-2	-19
18	15.7	30	11.9	34	22	11	-4	-21
19	15.4	26	11.7	29	19	8	-6	-22
20	16.2	22	12.1	24	18	9	-3	-17
21	18.1	19	14.2	21	19	13	3	-8
22	20.2	17	15 2	18	19	15	8	-1
23	21.7	16	16 7	16	19	16	11	3
24	22.2	15	17.3	14	18	16	11	4

VK SOUTH — SOUTH PACIFIC

UTC	MUF	dBU	FOT	14.2	18.1	21 2	24 9	28 5
1	18 5	18	15.0	21	19	13	2	-9
2	18.7	18	15.4	22	19	13	3	-9
3	18.6	19	15.3	23	20	13	3	-9
4	18.5	19	15.2	24	20	14	3	-9
5	18.4	21	15.0	26	21	14	3	-10
6	18.3	22	14 9	29	23	15	3	-10
7	18.4	25	14.9	34	26	17	4	-10
8	18.2	27	14.7	38	28	18	4	-11
9	17.8	28	14.3	38	27	17	2	-13
10	17.3	29	13.8	38	26	15	0	-17
11	16 7	30	13.3	38	25	13	-3	-21
12	16.1	30	12.8	37	23	10	-7	-26
13	15.6	31	12.3	35	21	8	-10	-30
14	15.0	31	11 8	34	19	5	-14	-35
15	14.2	31	10.9	31	14	-1	-22	.
16	13.4	32	10.2	29	10	-6	-29	.
17	12.9	33	9.8	27	8	-9	-33	
18	12.7	31	9.6	25	7	-10	-34	.
19	13.3	25	9.9	22	8	-6	-27	..
20	14 8	21	11 0	22	13	1	-15	-34
21	16.5	20	12 4	23	17	8	-5	-21
22	17.7	19	13 6	23	19	11	0	-13
23	18.2	19	14 2	22	19	12	2	-11
24	18.5	18	14 7	22	19	13	2	-10

VK WEST — EUROPE

UTC	MUF	dBU	FOT	14.2	18 1	21.2	24 9	28.5
1	10 7	11	8.3	5	-10	-27	.	.
2	9.7	2	7 5	0	-15	-32	. .	...
3	9.2	-6	7 2	-1	-15	-31	. .	..
4	10.8	-5	8.2	0	-7	-19	-37	..
5	14 7	1	11.8	0	1	-4	-15	-29
6	19 7	5	15.8	-1	5	4	0	-9
7	23 5	7	18.9	-3	6	8	5	0
8	25 9	8	21.1	-4	7	10	9	5
9	25.4	10	20.7	-3	9	11	11	7
10	25 1	12	20.4	1	11	13	12	8
11	24.5	14	20.3	7	15	16	13	8
12	23.8	17	19.2	19	22	20	16	9
13	23 1	20	18 5	31	28	23	16	7
14	21.5	19	17.1	34	27	20	10	1
15	18.3	21	14 4	32	22	12	-1	-16
16	15.2	24	12 4	27	13	0	18	-39
17	13 1	26	10 2	22	4	-13	37	.
18	11 5	26	8 9	15	6	27		
19	10.8	26	8 3	11	12	-35		
20	10 2	29	7.8	8	17			.
21	9 9	29	7 5	6	20			.
22	10.1	29	7.9	7	19	.		.
23	10 7	24	8.1	10	-12	-34	.	.
24	11 2	18	8.6	10	7	-26	.	..

VK WEST — USA/CARIBBEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28 5
1	17.2	2	13.0	-4	3	2	-3	-11
2	14.9	1	11.3	-1	3	0	-8	-20
3	13.4	0	10.1	2	2	-3	-14	-28
4	12.6	2	9.4	4	2	6	-19	-36
5	12.0	5	9.0	7	1	-9	-25	...
6	11.4	9	8.5	9	0	-13	-31	...
7	11.2	14	8.5	11	-1	-16	-37	..
8	11.5	20	8.6	15	0	-15	-38	...
9	11.7	27	8.9	19	1	-15	-39	...
10	10.9	30	8.3	17	-4	-23	. .	...
11	9.4	32	7.2	9	-17	.	.	...
12	8.9	33	6 9	6	-22	.	.	...
13	11.2	31	8 3	19	-1	-21	.	...
14	14.6	30	11 3	31	18	5	-12	-32
15	12.5	28	9.6	23	8	-6	-27	. .
16	12.8	21	9 8	19	7	-5	-23	.
17	16.7	17	12 9	18	15	9	-1	-13
18	16.0	13	12 2	11	12	8	0	-11
19	15.6	7	11 9	4	8	5	-2	-12
20	16 4	4	12 3	-1	6	5	0	-8
21	18.4	5	14.5	-6	4	6	3	-3
22	20.7	6	15.7	-11	3	6	5	1
23	22.2	6	17 1	-11	3	6	5	1
24	20.2	5	15 3	-8	3	5	2	-4

HAMADS

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FOR SALE NSW

● SIERRA Bi-directional power monitor, 10-500 watts, 25-250 MHz $190. John VK2ZHM QTHR (02) 417 5338.

● ICOM 275H 100 watt s/n 02293 allmode with box h/book ect as brand new very little use selling only to update to Satellite. Top buy for anyone wanting as as new all mode $1550 and will give buyer a brand new 100 watt pre-amp, buy your wife a Xmas present. A. Walsh VK2TBW (048) 61 2092 phone or (048) 61 1536 fax.

FOR SALE VIC

● SEASIDE QTH 3 bdr modern brick plus shack, bay view, Nally Tower, top uhf/vhf area. Ted VK3TG QTHR (052) 59 3225.

● KENWOOD TS930S HF xcvr excellent condition $1650; YAESU FL2100B linear amp, tubes 50% $500; KENWOOD TS520S HF xcvr good condition $500 all mikes and manuals. Geoff VK3ACZ QTHR (050) 24 5987.

● 70 CM PA mml 432/50 $175 ONO; OSKER BLOCK SWR $30. Ted VK3TG (052) 59 3225.

● YAESU FT757 GX HF xcvr s/n 6K380271 all WARC bands, cont/cover RX 500 KHz — 30 MHz $950; BEAM 8 el, log/periodic, cont/cover 13-30 MHz $425; YAESU FT7 xcvr 80-10m s/n 8K110595 $385. All in good condition complete with instruction books etc. Bob VK3AQK QTHR (057) 44 1676.

FOR SALE QLD

● SELL OR SWAP 10x4CX25OB+SK620 sockets and chimneys, 2x4CX1000K+K socket, 3x4CX3500A+socket, 1xTL236 ceramic 1000w 1000MHz, 4/125A 4/250+sockets, 2x4CX10000A+K socket, Fil+ xformers, Xmas tree stacks + HV caps, 2xAM17A lin or class-C 300-600w 70-140 MHz etc QRO stuff need good Txcvr. Paul VK4DJ (077) 75 5089 or 79 6861.

WANTED NSW

● COMPLETE 1970-1990 issues of CQ, Ham Radio and 73 Magazine. For swap 1948-1989 issues of QST. VALVE tester complete with manual and valve data. Tom VK2OE (046) 21 2228 evenings.

● COLLINS Transceiver KWM-2 any condition but cheap. Peter VK2CPK QTHR (02) 605 4790.

● VHF Communication magazine 1988 thru 1993 (English). William VK2AVH (02) 569 1573.

● EARLY TRIODES Tetrodes Pentodes KT88, KT66, KT77, KT61, EL34, 6CA7, 300B, 6L6, 845, VT-4C, 6B4G, early wireless and valve amplifier parts, literature etc. John (02) 488 8184.

WANTED VIC

● CIRCUIT and any info avail on Heathkit model GR78 transistor 6 band comm recvr; GALAXY III any condition any parts of. A. C. Styles VK3TV RMB 2943 Benalla Vic 3673, (018) 57 3405.

● 18AVT/WB vert antenna also prop pitch motor any condition. A. Greening VK3PA (054) 68 1088.

● 100 kHz crystal for repair of FT620 transceiver. Mike VK3XL (03) 703 2729 AH or 660 4310 BH.

● WA SKYRANGER HC-5-D 5 channel HF xcvr tech info manual. All costs reimbursed. John VK3CJB QTHR (053) 39 1014.

● COLLINS 51S-1, 75A-4, 75S-3B. Must be in exc cond. Susumu VK3ERR QTHR (03) 598 0282 after 7.00 pm.

WANTED QLD

● POWER Supply nominal 12 volts at 20 to 30 amps rating, prefer non switching model supply in good condition. John VK4TJB (07) 279 2464.

● HOUSE on acreage in SE-VK4 must have good location for DX, masts, antennas etc welcome. Peter VK4GPS (075) 39 4465.

WANTED WA

● HALLICRAFTERS SX100 receiver manual/circuit (or copies) also bandsread tuning knob all costs reimbursed. Dave VK6DX QTHR (09) 457 5749.

MISCELLANEOUS

● HAVING A SHACK CLEAN-OUT? Please contact Ken, VK3TL about collecting those QSL cards that haven't been looked at for years. We especially need DX cards but all are welcome. We need also USA QSLs to complete our US county collection. Please phone (03) 728 5350 or write to Ken Matchett, Hon. Curator, WIA QSL Collection at 4 Sunrise Hill Rd, Montrose VIC 3765.

AR

UPDATE

A Simple 300/1200 Baud Packet Radio Modem

In the 300/1200 baud modem article by VK3AQZ, which appeared on page 4 of the November 1993 issue of *Amateur Radio,* there was a small error in the wording of the addendum (page 11). After "DIN socket (J2)" it should read "and the wiper of VR3". (The word "top" is replaced by "wiper").

Make sure you amend your copy of the original article now!

Digicom with an AAPRA Modem

With reference to this article, which was published on page 26 of the November 1993 issue of *Amateur Radio,* an error has been pointed out by Helmut Neumann VK3CHN. Helmut built up the adaptor as described and connected it. However, when he switched on the C64 it immediately "went dead"! The 1 A fuse inside the computer had blown.

The reason is that pins 10 and 11 of the user I/O port have 9 V AC on them. The adaptor connects pin 10, via 12, 1 on the modem to GROUND! All that needs to be done is to remove the connection to pin 10.

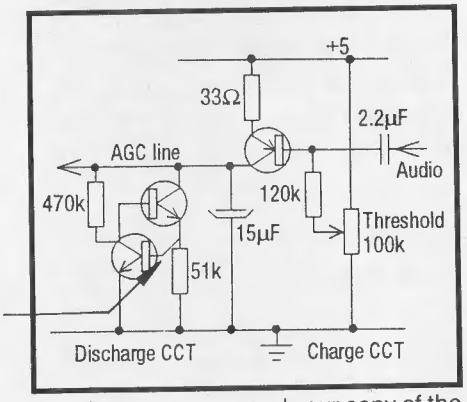
Helmut hopes that other "packeteers" have not been caught similarly. If the 1 A fuse has been replaced (wrongly) with a higher value, as he has seen in some cases, it can make "quite a mess of the PC board", which itself becomes an expensive fuse!

Make sure you amend your copy of the original article now!

"Update" *(contd. from page 54)*
Jon Linstad VK2WK articles

We have been advised by Jon Linstad, VK2WF, that an error occurred in each of his articles published in the November issue of Amateur Radio magazine. Please amend your copies as follows:

a. P 13, col 2, line 2, — 4999.8 kHz (+/– 200 Hz) should read 4999.8 kHz (– 200 Hz).
b. P 24, circuit diagram, — the base of the first transistor should connect to a point between the emitter of the second transistor and the 51 k resistor (see diagram).



Make sure you amend your copy of the articles now.

VHF communications

This quarterly publication, especially covering VHF, UHF and Microwaves, is essential reading for the serious VHF/UHF enthusiast.

The original is published in German by Terry Bitton, OHG, and the English language version is published by Mike Gooding, G61QM.

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Caulfield South Vic 3162

Subscriptions must reach the WIA by 31st January 1994 to ensure you receive your first issue for 1994 on time.

Editor's Comment
Continued from page 3

some Councillors were appointed rather than elected? Could it be that only a tiny minority actually had a vote? If the answer to the last three question is "Yes", does it matter? If you, the members, think it does matter, then let your opinions be known. You may well ask "how?" A good way to start is by writing to your Divisional President pointing out those aspects of the Divisional management which you see to be undemocratic, unfair, unjust or wrong. Perhaps you may be quite satisfied with your Division. If so, tell the President so. He (she) will appreciate your support. But don't rust away in the silent majority. You have a democratic right to be heard!

Traditional good wishes for Christmas and the New Year.

Bill Rice VK3ABP
Editor
ar

Hamads

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.
*Eight lines per issue free to all WIA members, ninth line for name and address
Commercial rates apply for non—members. Please enclose a mailing label from this magazine with your Hamad.
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Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.
*QTHR means address is correct as set out in the WIA current Call Book.

*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.
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CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

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The opinions expressed in this publication do not necessarily reflect the official view of the WIA, and the WIA cannot be held responsible for incorrect information published.

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Mr, Mrs, Miss, Ms:.....

.....

Call Sign (if applicable):.....

Address:.....

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VK2BWI Nightly at 2000 local on 3550 kHz

VK2RCW Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm

VK3COD Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz

VK3RCW Continuous on 144.950 MHz 5 wpm, 10 wpm

VK4WIT Monday at 0930 UTC on 3535 kHz

VK4WSS Tuesday at 0930 UTC on 3535 kHz

VK4WCH Wednesday at 1000 UTC on 3535 kHz

VK4AV Thursday at 0930 UTC on 3535 kHz

VK4WIS Sunday at 0930 UTC on 3535 kHz

VK5AWI Nightly at 1030 UTC on 3550 kHz

VK6WIA Nightly at 1930 local on 146.700 MHz and nightly (except Saturday) at 1200 UTC on 3.555 MHz.

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Now, if you'd like to find out about the latest in transceivers, or virtually anything else to do with amateur radio operation, why not give VK 3LZ a call. Or you could simply drop in and see him at ham heaven ... err ... our head office that is.

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